CSQ After powering up today, the fuel-cells indicated that degradation is very negligible. ..... (garbled) ..... from the beginning of the mission.

S/C Roger.

CSQ Cell status. Fuel-cell H_2 tank is not expected to vent until after 300 hours elapsed time, if any. Fuel cell O_2 is not expected to vent at any time during the mission.
ECS O_2 tank is predicted to vent some ..... (lost transmission)

FLIGHT Lost your air-to ground, CSQ.

S/C ....., huh?

CSQ Say again, this CSQ.

S/C We have all good news tonight.

CSQ Roger.
Depends on your fuel-cell H_2 and O_2 consumption. ....keeping this below nominal on O_2 by 3.5 percent and below nominal on H_2 by 6.5 percent. Fuel-cell ..... is more efficient than I expected.

S/C Very good.

FLIGHT CSQ Cap Com. Houston flight.

CSQ Go ahead, flight.

FLIGHT Roger. Correction there you said he was -----

S/C CSQ. We really appreciate all this information. Thank ..... it was pretty important.

CSQ Houston flight, CSQ.

FLIGHT Roger. His fuel usage is 6 pounds <u>below</u> the pre-flight curves. I believe you said <u>above</u>.

CSQ Gemini 7, this CSQ.

S/C Go. Gemini 7.

CSQ Okay. I may have made a mistake there. The fuel usage is 6 pounds below the expected usage.

S/C We're six pounds better off than I thought we'd be.

CSQ That's affirmative.

S/C Uh, roger, thank you.
That was very good.

CSQ Good.
Gemini 7. Your orbit is now 162.8 by 161.6. We expect to be 161 by 162 by the GT-6 launch. Launch will appear on Rev 118 at 182 60 (lost). 187:24 g.e.t.

S/C That sounds great. There's a lot of confidence here that .....

CSQ Roger. ..... 95 seconds after the first. .We.estimate 50 seconds planned pass at ...., at time of 6 lift-off. ..... will supply the exact date on that later.
Gemini 7. The pre-count on 6 has been completed and it's GO at the Cape.

S/C Roger.

CSQ On your PLA update over the RKV, Area 83-Bravo: The time g.e.t. ..... should be 131 44 37 with an REP of ... 21 plus 35. Do you copy?

S/C Would you read that area again, please.

CSQ Roger. Area 83-Bravo. 131 44 37. 21 plus 35.

S/C Thank you.

CSQ Your Area 84-Delta: Should be 84-Bravo. Do you copy?

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CSQ Flight, CSQ.

FLIGHT Roger, CSQ.

CSQ Thank you. We've had LOS. All systems are GO.

FLIGHT Roger.

That was live voice communication between spacecraft Gemini 4 - Gemini 7 and our Tracking Ship, the Coastal Sentry. At this time our spacecraft is moving over the Pacific on its way toward Hawaii. And you heard Flight Director Gene Kranz pass on through the Coastal Sentry spacecraft communicator a GO for the Gemini 7 flight crew on the Laser Experiment which will take place over Hawaii. The Laser Experiment - in this experiment they will attempt to establish an optical communications link and demonstrate the use of optical frequencies, or light beams for communications between an orbiting spacecraft and the pre-determined ground station. In this case, Hawaii. The pilot, rather the Command Pilot Frank Borman, will maintain the spacecraft attitude while co-pilot, Jim Lovell, aims a hand-held Laser transmitter at a visible light beam which will be directed to the spacecraft from the ground. Scientific data on sky radiance and atmospheric transmission effects on optical frequencies will also be recorded. In short, they will attempt to establish communications via a light beam. This is Gemini Control at 125 hours and 42 minutes into the flight. Our spacecraft is on revolution 79.

END OF TAPE

This is Gemini Control, 125 hours and 46 minutes -- 47 minutes now -- into our mission. In approximately three minutes, our spacecraft will be coming within tracking and voice range of the Hawaiian tracking center, and at that time, we will have the spacecraft crew attempt to establish optical communications with the ground using a light beam. That will be coming up in approximately three minutes. This is Gemini Control, 125 hours, 47 seconds -- 47 minutes -- into the mission and at this time the spacecraft is over the Pacific approaching the Hawaiian tracking station. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are 129 hours and 49 minutes into the flight of spacecraft Gemini 7. At this time Gemini 7 is approaching the Hawaiian tracking station, on its 79th revolution over the earth. We expect momemtarily to establish ground track with Gemini 7 and also, the spacecraft should be within voice range of that tracking station. At that time we will have the attempt at the Laser experiment. And it is our plan here to have this transmitted live so that you may hear the communication between the spacecraft and the ground tracking station. From all reports that we have had from our pilots, they are in excellent physical condition. The spacecraft systems are all go. And we have a very good flight on our hands. At this time we will try to pick up the conversation.

HAW	TM solid at Hawaii.
Flight	Roger, Hawaii.
HAW	Gemini 7, Hawaii. Let me know if you see anything.
S/C	7, roger.
HAW	Houstion Flight, Hawaii.
Flight	Flight, Hawaii.
HAW	Our Laser people advise they are tracking. The beacon signal is good.
Flight	Roger.
HAW	Do you see the island at all, Gemini 7?
S/C	Not yet. We are almost there according to our time.
HAW	Roger. I'll you you a MARK when you are at my PCA.
S/C	Roger. We got one island down here.
HAW	Roger.

HAW — You are going by PCA. MARK.

S/C — Roger. You are on Kauai, right?

HAW — Say again.

S/C — What island are you on, Hawaii?

HAW — Kauai, Kauai.

S/C — Rog. We picked them up but we couldn't see the lights.

HAW — Say again.

S/C — We picked up the island but we could not see the light.

HAW — Roger. You may still be able to see a little bit behind you.

S/C — We knew what island the Laser was on. There was some question as to where your radar was.

HAW — You saw nothing in the light at all. Is that affirm?

S/C — That's affirm.

HAW — Flight, Hawaii.

Flight — Go, Hawaii.

HAW — He is beyond PCA. I think we ought to break it off to save fuel.

Flight — Roger, go ahead.

HAW — Gemini 7, Hawaii CAP COM. Let's break it off.

S/C — Roger, Hawaii.

This is Gemini Control. 125 hours and 56 minutes into our mission. As you heard, the live voice communication between spacecraft Gemini 7, Jim Lovell, talking to the Hawaiian site, he did see -- the crew of spacecraft Gemini 7 did see the island. They did not pick up the Laser beam that was

being transmitted in hopes it could be picked up and used by the spacecraft crew as a means of voice communications to the ground. However, I repeat, they did report they saw the Island of Hawaii. They did not pick up the beam. This is Gemini Control. 125 hours 56 minutes into the flight, our spacecraft is now ending, very shortly in the next 20 minutes or so, its 79th revolution over the earth.

END OF TAPE

This is Gemini Control. We are 126 hours and 20 minutes into the flight of Spacecraft Gemini 7. Gemini 7 has just started its eighty-eighth revolution around the earth, and at the present time, it is passing over South America. Aboard our spacecraft, our pilot and our copilot -- rather command pilot and pilot -- are in excellent physical condition. The spacecraft systems are in a go condition. Very shortly, our crew will be entering the sleep period. Before they go to sleep, however, we have a fuel cell purge, which is coming up over the Rose Knot tracking ship prior to their retiring for the night. The sleep period should last approximately ten hours. This is Gemini Control, 126 hours and 20 minutes into the flight.

END OF TAPE

This is Gemini Control. Spacecraft Gemini 7 is now passing over the southern tip of Africa on its 80th revolution around the earth. It has been in flight 126 hours and 44 minutes. Aboard the spacecraft at this time the crew has entered a sleep period, and we will have no further voice communication with the spacecraft for at least this 10 hour period. A few minutes ago, the spacecraft passed over the Rose Knot tracking ship located in the South Atlantic off the east coast of South America. We had a voice conservation with the crew and at this time we will play back the tape of that voice communication.

RKV — Telemetry solid.

Flight — RKV

RKV — . . garbled . . We transmitted TX and we've turned the adapter C-band on.

Flight — Okay.

RKV — Gemini 7, RKV CAP COM.

S/C — Gemini 7.

RKV — Roger we are standing by for your purge. Place your quantity read switch to ECS O_2.

S/C — . . garbled . .

RKV — TM is very broken . . garbled . . this time flight.

Flight — Roger, RKV

RKV — Fuel cell O_2. Fuel cell H_2. . . garbled . . for tonights purge 490, 490.

S/C — garbled . .

RKV — Your bearing is 265.

S/C Thank you.

RKV Turn your quantity read switch to OFF. . . garbled . . propellent quantity and pressure.

S/C Say again.

RKV Propellent quantity and pressure.

S/C . . garbled . . 26 percent . . garbled . .

RKV Roger. We've got a map update for you when you are ready to copy.

S/C . . garbled ..

RKV . . . garbled . . . load 1325403. . . garbled . . 8438.5 degrees west, right Ascension. Time 11:45:31.

S/C Roger

RKV I've got a correction for the last block update you got. Area 84 Bravo should be area 84 Delta. The times are good.

S/C 84 Bravo to 84 Delta

RKV Roger. Also on your propellent quantity usage. You are actually 6 pounds below nominal. That means 6 pound too much we've used.

S/C Okay. . . garbled . . . other way up here.

RKV Roger. Our last water report showed that you - - the command pilot had consumed 6.6 pounds in the last 9 hours. We don't think that is quite right. Would you give us a correction on that?

S/C 55 ounces.

RKV That's 55 ounces.

S/C Right

RKV We'd also like to take a count on the water gun.

S/C . . . garbled . . .

RKV Roger. They would like you to use the ointment in your noses tonight.

S/C Garbled . .

RKV . . garbled . . if you become too warm, use pump A.

S/C If it gets too warm use pump A . . garbled . . primary loop.

RKV Okay. Pump A, either pump or primary loop.

S/C Roger.

RKV We also have an addition to that block update. When you are ready to copy.

S/C Go ahead.

RKV All right. Area 86-2 - 1354122 21 plus 44.

S/C Say again.

RKV 1354122. Turn TM off Flight.

Flight Roger, RKV.

This is Gemini Control. We are now 126 hours and 50 minutes into our flight. We have just played taped voice communications between spacecraft Gemini 7 and the Rose Knot, which was the last voice communication that we will have with the crew this evening. The voice from the spacecraft was that of command pilot, Frank Borman. Spacecraft 7 is now on its 80th revolution around the earth and is now passing over the Indian Ocean. This is Gemini Control at 126 hours and 51 minutes into the flight.

END OF TAPE

This is Gemini Control, 127 hours and 20 minutes into the flight of spacecraft Gemini 7. Our spacecraft at this time is passing over the Pacific midway between the Coastal Sentry tracking ship and Hawaii. It is on its eightieth revolution which will take it down towards the end of the revolution to the lower southern portion of South America. Aboard our spacecraft, the pilots according to our last medical report are in excellent condition, and all systems are go. The crew is now in a sleep period that will last for approximately nine and a half more hours. This is Gemini Control at 127 hours, 20 minutes into the mission.

END OF TAPE

This is is Gemini Control. Spacecraft Gemini 7 now on its 81st revolution over the earth is coming up on the West Coast of Africa. It is now 128 minutes - hours - 128 hours and 20 minutes into its mission. Aboard spacecraft Gemini 7, the crew is in a sleep period. Here in Mission Control Center, the flight controllers on the White Team are preparing their reports, and are preparing then, to brief the Blue Team which should be coming on here in about another hour. This is Gemini Control 128 hours 20 minutes into the mission.

END OF TAPE

This is Gemini Control. We are now 129 hours and 20 minutes into the flight of spacecraft Gemini 7. At this time our spacecraft is on its 81st revolution over the earth and is passing over the Pacific Ocean, ending the 81st revolution. Aboard the spacecraft our pilots have been in a sleep period for the past 2 hours. Up until the last report they both appeared to be awake; however, we have ground telemetry that indicates now that they are in a resting state, it does not tell us whether they are fully asleep. Here in Mission Control Center we are in the midst of a shift change with the Blue Team of flight controllers coming on and being briefed now by their counterparts, the White Team controllers, who will shortly be going off duty. This is Gemini Control, 129 hours 20 minutes into the mission. All systems on the spacecraft are GO and the crew is in excellent physical shape.

END OF TAPE

This is Gemini Control. One hundred thirty-one hours and 20 minutes into the flight of Gemini spacecraft 7. The Gemini spacecraft is now in the beginning of the 83rd revolution just off the east coast of South America in the South Atlantic. The crew appears to be asleep now and indications are that they went to sleep about 11:00 p.m. last night. The sleep period is scheduled to continue until 5:30 this morning. A couple of the flight controllers here in Mission Control here a little while ago made a few quick calculations and came up with a number of statute miles traveled at the end of the 82nd rev by Gemini spacecraft 7. This was about 20 minutes ago when they completed the 82nd rev. Since lift-off, the Gemini 7 spacecraft and crew have traveled a little over 2,130,000 miles through space. At 131 hours 21 minutes this is Gemini Control.

END OF TAPE

This is Gemini Control. One hundred thirty two hours and 20 minutes into the flight of Gemini spacecraft 7. We're in the 83rd rev over the ocean - just south of - in the South Pacific just south of Canton. The - all systems were reported GO at the last station contact, which was the Coastal Sentry off the coast of the Phillippine Islands. The crew, Frank Borman and James Lovell, are now asleep. Members of the Blue Team here a few minutes ago in the Mission Control were treated once again to some delicious nut cake baked by Mrs. Hodge, wife of our Flight Director. We are coming up on the west coast of South America in the 83rd revolution. At 132 hours and 21 minutes into the Gemini 7 mission this is Gemini Control.

END OF TAPE

This is Gemini Control, 133 hours and 20 minutes into the flight of spacecraft 7. The Gemini 7 spacecraft is now in its 84th revolution. The last station contact was with the Canary Island tracking station where a tape dump of onboard spacecraft telemetry was performed. James Fucci, command communicator at the site, reported all systems were go. The crew is still sleeping and not due to awaken for about 2 1/2 hours. The spacecraft is now pa ing over southern Asia on its 84th revolution. Gemini 7 spacecraft is nearly in a circular orbit around the earth with a apogee of 162.7 nautical miles and a perigee of 161.6 nautical miles. The next station to acquire the Gemini 7 spacecraft will be the tracking ship Coastal Sentry. Acquisition will be in about 12 minutes from now. At 133 hours and 21 minutes into the Gemini 7 mission this is Gemini Control.

END OF TAPE

This is Gemini Control. One hundred thirty,four hours and 20 minutes into the flight of Gemini 7. The spacecraft is now over South America just beginning its 85th revolution around the earth. The last station contact was about 45 minutes back with the tracking ship Coastal Sentry. Command communicator Harold Draughn reported all spacecraft systems were GO. He was asked by Flight Director John Hodge how the seas were and Draughn replied that they were much calmer tonight. The ship had been rolling in heavy seas earlier in the week. The next station to acquire the Gemini 7 spacecraft will be the Antigua and Canary Islands tracking stations in the Atlantic. The Antigua acquisition will be coming up in a few minutes. Gemini 7 crew members, Borman and Lovell, are still sleeping at this time. At 134 hours and 21 minutes into the flight of Gemini 7, this is Gemini Control.

END OF TAPE

This is Gemini Control, 135 hours and 20 minutes into the flight of Gemini spacecraft 7. We are in the 85th revolution and some 35 or 40 minutes ago acquisition was made of spacecraft Gemini 7 by the flight controllers at the Canary tracking station. James Fucci, the command communicator at the Canary site, reported that all systems were go at that time. Gemini 7 is now over northern Australia on its way across the Pacific Ocean going toward the west coast of South America. The crew's sleep period is scheduled to end in about 40 minutes and astronauts Frank Borman and James Lovell should be awake soon. A fuel cell purge is scheduled in about 45 minutes when Gemini 7 spacecraft makes its pass over the Canary tracking station. At 135 hours and 21 minutes into the flight of Gemini spacecraft 7 this is Gemini Control.

END OF TAPE

This is Gemini Control at 136 hours 20 minutes into the flight of spacecraft 7. The Gemini spacecraft 7 is now in the 86th rev over North Africa. We have a report here now on the preparations at the Cape for the launch of Gemini 6 on Sunday. The pad 19 activities at the Cape at the present time include the installation and checkout of spacecraft pyrotechnics. The precount, which started at 4:15 p.m. eastern standard time yesterday, was completed last night at 8:30. A booster review meeting is scheduled to start this morning with both the prime and the backup crews for Gemini spacecraft 6 in attendance. That will be Walter M. Schirra, Jr., and Thomas P. Stafford, the prime crew and Virgil I Grissom and John W. Young, the backup crew. Scheduled runs by the Gemini 6 prime crew in the Gemini mission simulator at the Cape are scheduled also sometime this morning. The mid-count for the launch of the Gemini 6 spacecraft is scheduled to get underway at 12 noon eastern standard time tomorrow and continue through 4:00 p.m. eastern standard time. Booster refueling is scheduled to start at 6:00 p.m. eastern standard time Saturday for the Sunday morning launch of Gemini 6. We have a weather forecase for launch day at the Cape and it is good. Visibility of 7 miles is predicted with winds of 5 miles per hour, temperature of 65 degrees, and 2 foot waves off shore. Low Stratus clouds now over the area should be broken by launch day. The Gemini 7 spacecraft over North Africa just passed over the Canary Tracking Station a few minutes ago and Gemini 7 pilot James Lovell had voice contact with the Canary Flight Controller. We will play that taped conversation now.

Canary Gemini 7, Canary Cap Com, com check, how do you read, over.

S/C 7, Good morning. Loud and clear.

Canary And good morning to you also. Have you done a fuel cell purge yet?

S/C Negative.

Canary Okay, we have a fuel cell purge for you and also we have a little bit of a flight plan update for you and also some onboard readouts.

Canary Roger, starting fuel cell purge now.

Canary Okay. Can you copy this flight plan update while you are purging?

S/C Roger. You can start.

Canary Okay. Node 138 55 11, rev 87, 130.8 degrees left, 11 hours 4 minutes 63 seconds, right Ascension. We have a flight plan time line up date for you, change 136 00 00 to 136 17 00. 37 45 00, PLA update at Canary. 138 20 35, crew status report, command pilot, Carnarvon. 139 02 16, crew status report, pilot over Texas. That is the flight plan update. Did you copy?

S/C Roger, thank you.

Canary Okay. Like to get an OAMS propellant quantity readout please.

S/C Roger, it has increased during the night and now reads 30 - about 30 percent.

Canary Okay, copy.

S/C There is a little bounce in our pressures this morning, number 1 reads 10 and number 2 reads about 7.5. 10 and 7.5

Canary Place your quantity read switch to ECS O_2, please.

S/C ECS O_2.

Canary Roger. We want a quantity and pressure from you please.

S/C Roger. Quantity is about 82 percent, pressure 640.

Canary I copy. Now could you place quantity read switch to fuel cell O_2.

Flight What is that, Canaries?

S/C Roger, I read (garbled) quantity, and pressure 750.

Canary Copy. Fuel cell H_2 please.

S/C 77 percent and 410.

Canary Okay, quantity read switch to off.

S/C It's off.

Canary Okay, we'd like an OAMS source helium pressure and temperature.

S/C 1300, ... 1.

Canary Okay. OAMS fuel temp.

S/C ...

Canary OAMS oxidizer temp.

S/C I'm sorry, that is 51 for both OAMS and fuel and oxidizer is 50 percent.

Canary 51 on OAMS fuel temp and 50 on OAMS ox temp.

S/C Right.

Canary Okay, temperature on the OAMS source helium was 81?

S/C That was wrong. It is about 52.

Canary Okay, copy. About 52.

Flight Canary Cap Com, Houston Flight.

Canary Go ahead.

Flight Will you ask them if they can give us an idea of what rates they are drifting at.

Canary Okay. 7, Canary. Can you give us an idea of what kind of a rate you are building up at your drifting - that you are drifting at at the present time?

S/C Wait till we look outside.

Canary Okay. Can you see Canary?

S/C It is about the same as it has been. I guess we haven't vented much during the night. We are very slowly tumbling.

That conversation was with the Gemini 7 spacecraft over the Canary tracking station. We got a report just a few minutes ago from the Aircraft Carrier Wasp in the Atlantic Recovery Zone. The weather there has a visibility - with the weather there we have a visibility of 10 miles, 4 tenths scattered cloud cover, they have 4 foot swells with 3 foot waves. The temperature was 70 degrees. They reported they were just about on station for splashdown point for the 88th rev. At 136 hours and 27 minutes into the flight of Gemini spacecraft 7 with the spacecraft now going over the Arabian Peninsula toward the Indian Ocean. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are now 136 hours and 44 minutes into the flight of Gemini Spacecraft 6...7. The Gemini 7 Spacecraft just crossed the Indian Ocean in the 86 th revolution around the Earth. Shortly, the spacecraft will be coming up on the Carnarvon tracking station. It should up in about a minute. And, we will bring you a live pass on that passing over the Australian tracking station at Carnarvon. The 7 Spacecraft is now coming up on the Carnarvon tracking station, and we'll bring you that live acquisition now.

DYI Canary has had TM contact.

CRO Carnarvon. Yea.

HOUSTON Roger, Carnarvon.

CRO Gemini 7, Carnarvon Cap Com.

S/C Go ahead, Carnarvon. Gemini 7.

CRO Well, Roger. Good morning from Australia.

S/C Morning.

CRO I've got the correction to the nodal update at 138:55:11 if you're ready to copy.

S/C One minute, please.

CRO Roger.

HOUSTON Your summaries look good Carnarvon.

CRO Beg your pardon.

S/C Go ahead.

CRO Roger. On the other remarks that they gave you on Rev. 87, they gave you 11 hours, 04 minutes, 63 seconds; 04 minutes, 63 seconds comes out to be 05, 03.

S/C Roger. That's right.

CRO You're okay. Big correction.

S/C Thank you.

CRO Righto. We also have some information on your OAM status.

S/C Go ahead, please.

CRO Okay. Telemetry after OAM system stabilization shows you have 63 pounds of fuel, 122 pounds of oxidizer remaining. This is 36% actual, 31% on your gauge. OAMS usage is right on the flight plan.

S/C Well, we gained 6% over the night. When we go back to sleep, maybe we'll get more tonight.

CRO Roger. This was waiting for a temperature stabilization; it did not stabilize as fast as we had originally anticipated.

S/C I noticed that also up here. Remember, it went down without any usage at all, and then it came back up; so, I guess we're in pretty good shape.

CRO Righto. Real good shape on that. And, also on your fuel cell cryogenics; it indicates a path of approximately 2000 amphere-hours above the normal 14 day flight plan. Feel free to use A pumps in one or both groups for your comfort.

S/C Is that 2 and three zeros?

CRO That's two thousand.

S/C Wowee!

CRO That's looking real fine.

S/C Thank you.

CRO That's about all we have for you this pass, Gemini 7. You're looking real good from the ground, and we're standing by if you have anything.

S/C Thank you very much.

CRO Righto.

That last conversation was with the Gemini 7 Spacecraft and the Carnarvon, Australian tracking station. The spacecraft will now pass on over Australia and head out over the Pacific Ocean on its pass toward Central America.

t'll get there at the end of the 86th revolution. At 136 hours and 49 minutes into the mission of Gemini Spacecraft 7, this is Gemini Control.

END OF TAPE

This is Gemini Control, 137 hours and 20 minutes into the flight of Spacecraft Gemini 7. The Gemini crew have been up and awake since about 5:30 CST this morning. They had their first voice contact of the morning with the Canary tracking station in the eighty-fifth rev. The spacecraft is now over the South Pacific on its way toward a pass over Central America. At 137 hours and 20 minutes into the flight of Gemini Spacecraft 7, this is Gemini Control.

END OF TAPE

This is Gemini Control Houston here, 137 hours 59 minutes into the mission. As you might have noticed, the Red Team is at work. We have some tape from the Canary pass, we will play that now.

Canary — Gemini 7, Canary Cap Com, com check, how do you read?

S/C — Loud and clear Canary.

Canary — Okay, we have a PLA update for you when you are ready to copy.

S/C — Ready to copy.

Canary — Okay, for this the area will be 400K, BEF is constant at 21+50.

S/C — Okay.

Canary — 90-1, 140 20 06; 90-1, 141 55 58; 91-4, 144 48 01; 92-4, 146 23 41; 93-4, 147 59 16; 94-3, 149 17 18; Area is good in all these areas, the weather.

S/C — Roger, thank you.

Canary — Okay, I have a flight plan update for you also, two items.

S/C — Okay

Canary — S-5, 139 31 50, sequence 21, mode 02, pitch 30 degrees down, yaw 1 degree left. D-4/D-7, 139 31 50, sequence 418, mode 02,

S/C — This is Gemini 7, I don't read you, over.

Canary — How do you dopy now?

S/C — Loud and clear now, I missed - the last thing I got was mode 02 on D-4/D-7.

Canary — Okay, that was it, due to weather.

Flight — Canary Cap Com, Houston Flight.

Canary — Go ahead, Flight.

Flight — We would like an open circuit voltage reading on stack 2C.

Canary	Okay. Gemini 7, Canary.
	We would like an open circuit voltage on stack 2C, please.
S/C	Okay, open circuit on stack 2C. This is Gemini 7, 2C is off scale high on our meter, it is over 31 volts.
Canary	Roger, copy.
Flight	We copy.
Canary	Do you want circuit voltages on the rest of them?
Flight	Affirmative.
Canary	Okay, 7, we would like all the stack voltages right now.
S/C	Roger. 1A pump, 27.9; 1B, 27.9; 1C, 27.8; 2A, 27.8; 2B, 27.8; 2C, 27.8.
Canary	Roger. Copy.
Flight	Houston Flight.
Canary	Go ahead Flight.
Flight	I think you ought to tell him all that sounds very good. We would like an LOS main from your site.
Canary	Okay. Gemini 7, we have nothing else for you. We will be standing by. All those voltages look real good.
S/C	Very good.

END OF TAPE

Gemini Control here, 138 hours 44 minutes into the flight. At Carnarvon a few minutes ago we had a medical data pass on the Command Pilot and it went like this.

Carnarvon — Gemini 7, Carnarvon Cap Com. We have a valid pressure. We are standing by.

Carnarvon — Gemini 7, this is Carnarvon surgeon. We are standing by for your blood pressure.

S/C — This is 7, roger, it's coming down in a second.

Carnarvon — Your cuff is full scale. Surgeon, Gemini 7. We have a valid blood pressure, would you give us a mark when you begin your exercise.

S/C — Mark.

Carnarvon — Gemini 7, your cuff is full scale. Gemini 7. We have a valid blood pressure. Would you give us your food and water report now, please?

S/C — Roger. Total to date, the Command Pilot has had 624 ounces of water and we have just finished day 8 meal A.

Carnarvon — Roger. That was for breakfast.

S/C — Roger, that was breakfast.

Carnarvon — All right.

S/C — And the Pilot also had breakfast, same meal, and he has had 422 ounces of water.

Carnarvon — Roger, thank you Gemini 7. Carnarvon Surgeon out.

S/C — Roger Carnarvon.

Carnarvon — Gemini 7, Carnarvon Cap Com. We have roughly 5 minutes left to go. We will be standing by. Everything looks good from the ground.

S/C Very good. Everything looks good up here also.

Carnarvon Roger.

Flight Houston Flight.

Carnarvon Flight, Carnarvon.

Flight Are you picking up the HF?

Carnarvon Stand by and I'll check on it. Affirmative Flight, it is coming in very weak here.

Flight Roger, ask the crew if they are receiving it?

Carnarvon Roger, will do. Gemini 7, this is Carnarvon Cap Com. We are picking up the HF here on the ground, are you getting it up there?

S/C Stand by, we'll try.

Carnarvon Roger.

S/C Carnarvon, this is Gemini 7. Negative, we are not receiving it up here.

Carnarvon Okay Gemini 7, thank you. We are real weak here on the ground Flight, and they report they are not getting it.

Flight Rog, we copy.

S/C Carnarvon, one other thing you can pass on. On the vision test this morning Borman was -6 and Lovell -12.

Carnarvon Roger, copy, minus 6 and minus 12.

S/C That is affirmed.

Carnarvon Carnarvon LOS.

Gemini Control again. The weather for 7 this morning continues to look good for the next 48 hours. No major disturbances predicted in any of our four primary landing areas. Among the interesting features to be overflown during the course of this day include a frontal cloudiness area off Baja, California and Jetstream associated Cirrus clouds over North Africa.

Beginning this morning, the Weather Bureau Group here in our Mission Control Center is now preparing weather forecasts for the 6 launch. This is the first that we have received from them. They normally try to run about 48 hours ahead on any given activity, so for Gemini 6 they are predicting the weather in the Cape Area will look like this. The prediction calls for fair weather with scattered clouds. Surface winds will be light and variable, probably south east, seas in the off shore area will be 1 to 2 feet. Temperature about 65 degrees on Sunday morning. Their prediction for the four primary landing areas around the world is also good for Sunday. This is Gemini Control Houston.

END OF TAPE

Gemini Control here, 139 hours 18 minutes into the mission. We have just completed a medical data pass on the swing across the Carribbean Gulf of Mexico and it was a very jaunty conversation. Frank Borman turned the table this morning on Surgeon Chuck Berry here in our Control Center. He started off by observing that Dr. Berry sounded a little sleepy and then he asked Dr. Berry for a water intake report. There were several other comments that Dr. Berry also sounded a little hoarse and generally had some fun with our Flight Surgeon. The taped conversation went like this.

Cap Com — Gemini 7, Houston.

S/C — Go ahead Houston, Gemini 7.

Cap Com — Roger. Good morning. We have a valid temp on you. Give us a blood pressure and stand by for the Surgeon.

S/C — Roger.

Surgeon — Cuff is full scale.

S/C — Roger. You sound sleepy.

Surgeon — You are right.

Cap Com — Don't you think his voice sounds kind of hoarse up there, Gemini 7?

S/C — Roger. How much sleep did you get. Could we have a water report on you please, Flight Surgeon?

Surgeon — Water only. Roger.

Flight — Houston Flight, how long have you been up there now?

S/C — Let's see, it is 139 hours 5 minutes 14½ seconds.

Flight — Roger, good check.

Surgeon — Frank, while we are waiting for this --

Flight — Is that days or hours???!

S/C — Those are hours. I feel like I was born up here. Go ahead Chuck.

Surgeon — Frank, could you do a check on the total counts in your water gun and read them to me while we are getting these blood pressures on Jim. I'll tell you why in just a minute.

S/C — 2258.

Surgeon — We have a valid pressure, give me a mark at exercise.

S/C — Mark.

Surgeon — That was 2258. I think we have apparently got an error in the counts. When we compute the water from your counts and compare them to the ounces that we have been reading, they don't add up. There looks to be about a 10 pound error and sometime during the day I wish you could go through and re-calculate your log and see if we can find that error.

S/C — We will, Chuck.

Surgeon — Cuff is full scale. There is one other item we missed on that report that you gave a while ago. We didn't get the dinner meal, we need the meal eaten last night.

S/C — Okay.

Flight — Gemini 7, Houston. We would like you to place the stack 2C on open circuit voltage for about 5 minutes and give us a reading on it every minute.

S/C — You are starting to play games with us now. Are you serious?

Flight — We are serious. We are serious. The current on Stack 2C has been coming down for about the last hour and one-half or 2 hours and we want to take a look at what the voltage is doing.

Surgeon — We have a valid blood pressure.

S/C Let's see, day 4, meal C last night Chuck, and we will open circuit this for 5 minutes now.

Surgeon Okay Frank. We also need your report on your sleep. We need some hours from each of you and something about the type. We noticed that your sleep didn't appear to be very good last night.

S/C It was better last night than the night before. Jim slept very soundly for about 7 hours and I slept pretty good for about 6 hours.

S/C Surgeon, is the blood pressure okay?

Surgeon Yes sir. Could you give us a reading from column 5 and 6 on the log.

S/C Lovell finally made the count 6.

Surgeon Very good.

S/C HALLELUJAH.

Surgeon Excellent.

S/C Opening Stack 2C at this time.

Flight Roger, Jim.

S/C The Pilot has 13 in column 5.

Surgeon Roger, 13 column 5.

Flight Jim, would you keep me posted on how that open circuit voltage looks, that is whether it is fairly steady?

S/C Roger, right now it has just stabilized and it is just a bit above 31 volts, way at the top of the scale.

Flight Roger, keep us posted.

Surgeon Do you have the Pilot's reading in column 5.

S/C Roger, 14.

Surgeon And your reading in column 6.

S/C One in column 6.

Surgeon Okay. Give me a statement about your general condition this morning, each of you. Jim sounds pretty hoarse this morning. How do you both feel?

S/C We both feel all right.

S/C I feel fine, I'm a little sleepy but Lovell is bouncing all over the place here.

S/C I think Chuck my nose is all stuffed up, that is why I feel worse, I sound hoarse too.

Flight What is your excuse, Surgeon.

Surgeon I'm all plugged up too.

Surgeon Can you tell me a little bit about that urine bag, where it broke yesterday. Did it break around the neck seal?

S/C Neck, right.

Surgeon Right at the neck seal, okay. Did it go all out into the cabin, or were you able to get it contained pretty well?

S/C I caught most of it in my face and hands.

S/C Come on.

S/C Say, after all, we are being conservation minded on water too here.

Surgeon That is going too far.

S/C It went all over but I caught it with some tissues and we just threw it in back, there may be some wet left in it as a matter of fact.

Surgeon Okay, fine.

Surgeon Frank, we had an oral temperature reading that came up to 97.7 on your oral temperature probe over CSQ and RKV on revs 81 and 82. Was there any reason for this do you know?

Did you have the oral temperature proble in some position that it would pick up temperature.

Flight — Can I have those open circuit voltage readings.

S/C — They just came to 32.

S/C — Yeah, we stabilized at about 32 now, it is just right at the top of the indicator, it is just at the top now. 32 volts.

Flight — Roger.

S/C — We are not going to use any fuel at all except to pursue the experiment.

Cap Com — Very good, Frank. I was going to comment on that. We are actually running okay per day on fuel usage, but we are slightly behind on our experiments because of weather conditions, so we want you to keep being very stingy on the fuel.

S/C — Rog. We are not going to try to pick up anything or do anything at the targets of opportunity unless you call them up because you have to maneuver even then.

Cap Com — Roger.

Flight — How about another voltage reading.

Surgeon — Jim, do you think it would help if we used one of those shrinking agents that we have aboard there for your nose. Have you been able to clear it, or would you like to try that?

S/C — My nose is too dry already, Chuck, so I don't need any of those other things.

Surgeon — It is just dry, it is not swollen, it is just dry, right?

S/C — All we need is Vicks.

Cap Com — Gemini 7, could you give me another voltage reading and standby to start your flight plan update.

S/C — Roger, the voltage is still up there at the 32 or above.

Cap Com — Roger. Ready to start copying?

S/C — Stand by a second. Okay, go ahead Houston.

Cap Com — Roger. The first item is D-5, time 140 10 00. This will be a test number 4. For your information ground tests showed that radio frequency interference can saturate this photometer, so we are interested in a test where we turn off all our RF sources. Are you ready to copy the test?

S/C — Roger, go ahead.

Cap Com — All transmitters and beacons off. You can give me another voltage reading and get the Stack 2C back on the line.

S/C — Roger, she still runs above 32 and I'll put Stack 2C back on the line.

Cap Com — Roger.

Flight — Jim, that thing looks very good to us. We will keep an eye on what the current does.

S/C — Roger, thank you. Another thing we noticed was the drop in AMPS of the indicator.

Flight — That is the same thing we are seeing.

S/C — Looks like it is just joining 2A and 2B, Chris.

Flight — Yeah, I guess that is the thing that they don't understand, it has been up so high and now it is coming down.

S/C — Roger.

Cap Com — You would normally expect it to run a little higher because it does run hotter.

S/C — All right.

Cap Com — Okay, next step in the test is make normal calibration on Jupiter. I may lose you somewhere in here, but I'll keep going as long as I can.

S/C — Elliot, Jupiter is right next to the moon and that is going to be tough to do.

Cap Com — All right. Just pick out another bright star, or planet, just so it is a good bright one.

S/C — All right, will do.

Cap Com — Make second calibration without the pressing cal button and count turns from cal setting to max. Turn gain wheel to mend setting. Turn each transmitter and beacon on one at a time and look for reticle color change. Port turns to maximum and color change versus equipment activated, that is as you turn the items on. Do you copy?

S/C — .....

Cap Com — Gemini 7, it sounds like we are about ready to lose you here, we will continue passing this up at Canary.

S/C — Roger we will see you over Canaries. We are going to do an S-5 now.

This is Gemini Control at 139 hours 29 minutes into the flight. Our orbit this morning is on our official orbit digital display and shows 162.2 by 162.0. Flight Dynamics Officer here advises that he considers the orbit to be exactly circular. The crew update continued as we crossed the Atlantic. Elliot See contacted them again by UHF over the Central Atlantic and he dropped off for a few minutes, then the briefing continued via the Canary Station. Here is that conversation.

Canary — Gemini 7, Canary Cap Com. Com check. How do you read?

S/C — This is 7, loud and clear.

Canary — Okay, we can continue with this flight plan update. First of all we would like your evaluation of the weather over Africa. We have an Apollo landmark scheduled on the next rev and we would like your evaluation on that, okay?

Flight — That is South along the Coast.

S/C — Roger, we will give it to you. On our last pass, the weather looked pretty good, but we will give it to you on this pass.

Canary — Okay, that is around the coast.

S/C — Around the coast, roger.

Canary — What part did you miss on this test 4?

S/C — Canary, we are trying to get an S-5 now, I wonder if we can hold off on that, please.

Canary — Okay, give me a call when you are ready.

S/C — Roger. Canary 7.

Canary — Go ahead.

S/C — ... (garbled) D-5.

Canary — Okay. Where do you want me to start. How far have you gotten?

S/C — Why don't you start at the beginning?

Canary — Okay. This is the equipment test 4. Number one, all transmitters and beacons off. Make a normal calibration on a bright star of some sort. Three, make a second calibration without depressing cal button and count turns on cal setting to match.

Houston	Systems, Houston.
S/C	Roger, I should have taken shorthand. Go ahead.
Canary	Okay. Turn gain wheel to minimum setting.
Flight	Canary systems, Houston Flight.
Canary Systems	Houston, go ahead. Canary systems.
Canary	Each transmitter on and beacon on one at a time and ...
Canary System	Houston, go ahead. This is Canary Systems.
Flight	Tell him to use any star - bright star as long as it is not a red star.
Canary Systems	Roger, will do.
Canary	Report turns to maximum and color change matches equipment activated. Use any bright star as long as it is not red. Do you copy. This is for the calibration.
S/C	Roger, turn each transmitter and beacon on one at a time look for color change, and then report what equipment makes the color change and the gain wheel setting, is that correct?
Canary	Rog. Turn to the maximum, any color change versus equipment activated.
S/C	Roger. Understand. Any bright star as long as it is not a red one.
Canary	That is affirmative.
S/C	We are coming up on the Coast of Africa right now and the coastline, I would say is mostly clear with some Cirrus, a few Cumulus hanging on the inside. The desert area is clear.
Canary	We copy. We have more of the flight plan update if you are ready to copy.

S/C Go.

Canary 140 34 00, fuel cell purge at Guaymas. 140 37 00, go--no-go at Texas. Transponder check 140 44 08, sequence 02, pitch 30 degrees down, yaw 4 degrees right. 141 00 00, bio-med recorder one continues off at 143 00 00. Apollo, 141 00 10, sequence 85, mode 01, pitch 30 degrees down, yaw 24 degrees left. D-4/D-7, 141 20 00, sequence 413, mode 02, use Venus. 142 00 00, exercise period. 142 10 00, eat period. UHF test, 143 02 56, use horizon scanner to control spacecraft BEF for UHF test over Carnarvon. Use the adapter antenna. Do you copy so far.

S/C We copy quick.

S/C D-4/D-7, we will pick it up later.

Canary Okay.

Flight Give it to them later Canarys.

Canary Roger Flight. Systems are go at Canary.

END OF TAPE

Gemini Control Houston here. Today should be one of our busier days in the experiment department. Quite a few layed on, many operational checks within the cabin. Over Tananarive, Elliot See called 7 and gave them an update and it went like this.

CAP COM — Gemini 7, Gemini 7, Houston Cap Com. How do you read?

S/C — Read you.

CAP COM — Like to continue the flight plan update if your communications are OK through Tananarive.

S/C — Roger, we're working a little hard here now trying to get ready for GT-6.

CAP COM — Roger, let me know if you have time to copy.

S/C — Roger. We need some information sequence ....

CAP COM — Sequence what? Again, Gemini 7. Gemini 7, Houston. Understand you need some more information on some sequence. We did not copy.

S/C — Roger. Our sequence which occurs is 1404408. We don't have the, we don't know what the title is.

CAP COM — Roger. That's a transponder test.

S/C — Roger. Elliot, I copy now.

CAP COM Roger. Understand you left off on a UHF test and you did get the time on it, is that correct?

S/C On the UHF test....

CAP COM You seem to be cutting in and out, Gemini 7. Understand you copy. The UHF test and the time and instructions follow. Control spacecraft BEF for the test over Carnarvon. Use adapter antenna. How do you copy?

S/C Fine, but we don't have the time on that one.

CAP COM Roger. Time is 143 02 56. Do you copy?

S/C Roger.

CAP COM Next item. Time 143 07 56. Begin UHF test. Key UHF continuously until 143 17 01. Voice modulate UHF until 143 12 28. How do you copy? Gemini 7, Houston, I did not read any answer. How do you copy the last update?

S/C We copy. Go ahead, please.

CAP COM Roger, understand you copy. I'm going ahead. MSC-41433644, sequence 05, mode 01, pitch 30 degrees down, yaw 13 degrees left, MSC-41441458, sequence 10, mode 01, pitch 30 degrees down, yaw 20 degrees left, do you copy?

S/C We copy, Houston.

CAP COM Roger, that's the complete flight plan update.

S/C Roger, Houston.

FLIGHT Carnarvon, Houston Voice Control. Carnarvon Cap Com, Houston Flight.

CRO Carnarvon, Houston Flight.

FLIGHT We want to make sure they got all that good stuff on the flight plan update. You might check with them to see if they got all the times and the words.

CRO Roger.

FLIGHT Also, tell you what---

END OF TAPE

Gemini Control, Houston. We're on the 88th revolution around the Earth. The 93rd inertial orbit. Over Carnarvon, the conversation went like this.

CRO Gemini 7, Carnarvon Cap Com.

S/C Okay, Carnarvon. Gemini 7.

CRO Roger. Would you check your circuit breakers, please. We do not have an acq aid beacon and we had to go to a stand by TM frequency to pick you up.

S/C Roger. They're all off. We turn them back on anytime we're running a D-5 test.

CRO Oh! Roger. Understand. Okay, Flight, he's running tests at this time with turning the equipment off.

HOUSTON Understand.

CRO We haven't made any C-Band track. We do have TM on the stand by frequency at the present time. As soon as he finishes that, we'll try to reconfigure properly.

HOUSTON Roger.

S/C We have them on right now Carnarvon.

CRO Roger, Gemini 7.

S/C Carnarvon, can you transmit this to Houston for us?

CRO Roger. Sure can.

S/C Can the D-5 instrument be aligned and calibrated. I'm serious. We've pushed the calibration button. It stays full red regardless of the position of any of the transmitters, and regardless of the position of the gain wheel. When we did not use the calibration button, it stayed full green regardless of anything we did, including the gain wheel.

CRO Roger. I think we've got all that. We've got it on tape, if not.

S/C I think they'd like to know it right away.

CRO Roger. I'm sure Flight's copying

HOUSTON We've copies, thank you.

S/C Carnarvon, there is one addition; when I push the calibration button, the green had a tendency to slightly go red at the low gain stage, but has always stayed positive green all the way up, but the gain's the same.

CRO Get it, Flight?

HOUSTON Affirmative.

CRO Okay. Thank you much. Gemini 7, Carnarvon. Did you get all the information on the flight plan update. Are you happy with all the plan?

S/C One thing we need to know if ...

CRO Gemini 7, Carnarvon. Say again.

S/C We need to know after D-4, D-7 at 141:20:00...

CRO Roger.

S/C Between then and the UHF test at 143:02:56.

CRO Roger.

S/C I can't find 142:00:00.

CRO That's exercise period.

S/C 142:10:00.

CRO Eating period. Do you copy?

S/C Thank you.

CRO Roger.

S/C And, Carnarvon. One more item on the D-5 photometer. We had a We had a light burn out in the cockpit just recently, and now it appears it has saturated both calibrates now, but not down. Reticle is full green.

HOUSTON After they'd completed the other tests?

CRO Gemini 7, was that after you'd completed the other tests?

S/C Roger. That's after we'd completed the other tests and turned the light off the cockpit to take the updates, and I was still using the D-5 and noticed that the reticle stays green now, whether the calibrate is down or not.

CRO Roger. Thank you.

HOUSTON We copy.

S/C Carnarvon, it's a very dim light actually. It must be very simple fixing it.

CRO Roger. Okay, I have some general information for you on the fuel cells. I believe, as you're probably well aware, Stack 2C has been carrying most of the load, and the experts feel that during the hydrogen purging, since all three sections are purged together, that 2C hasn't been getting all of the water given out of it. So, they're considering, at the present time, doing a special hydrogen purge on 2C some time today over the States and they're still looking into that. They'll give you more information out over the States..

S/C Roger.

CRO We find that Woomera is trying to steal our C-Band beacon again.

HOUSTON Roger.

CTN Canton LOS.

Gemini Control Houston here with 7 halfway between Canton Island and the Carnarvon station. Flight plan calls for the crew to be performing a D-5 experiment. They'll be using that bulky photometer that nobody seems to fully understand. We're running additional tests here on the ground. There is some

feeling that perhaps the very sensitive instrument on board is being saturated by radio interference within the spacecraft. It seems a good possibility at this point. Going across the States this time, the crew will turn on their L-Band transponder as they approach the west coast of Mexico. Then they will conduct a normal fuel cell purge. They will be given a "go" for 104 revolutions. Over the Cape, they will conduct an L-Band transponder test. The Cape will bounce the signal up to them. Their transponder will rebroadcast it back down if the planning information is correct. After the Stateside pass, they're to do some Apollo landmark experiment photography east of the Canary Islands, and a D-4, D-7 experiment in the area of Tananarive. At 140 hours, 13 minutes into the flight, this is Gemini Control, Houston.

END OF TAPE

This is Gemini Control Houston, 140 hours 34 minutes into the flight of 7. We are only seconds away from our Guaymas acquisition. There goes Guaymas's first call out to the spacecraft. A little later today, about 4:30 this afternoon, we are going to start a simulation with 6 spacecraft and run through an entire 4 revolution rendezvous type flight. Hopefully what we will be doing on Sunday. Let's cut over now to the action. The Guaymas station has called them and has asked them to start their fuel cell purge.

S/C This is 7. Open circuit voltage now reading 30 volts. It is probably still going up very slowly.

Guaymas Roger, understand. Just as a precaution during this purge we would like for you to monitor 2C on the voltmeter and the amp meter. If there are any large deviations during the purge, they would like for you to stop the purge.

S/C Roger, I'll keep it 2C on the volt meter. It has gone up now to 30.5. 2C amps are reading zero of course.

Guaymas Rog. We are ready for your purge. Everything looks good on the ground.

S/C You want me to make a normal purge, over?

Guaymas Rog. Normal purge.

S/C Roger. Coming through now. One more question. Do you want me to keep 2C off the line for this second section oxygen purge?

Flight Negative.

Guaymas Negative.

S/C Roger. Thank you.

HOUSTON Roger. Look okay?

Guaymas Roger, Flight. It looked good during the hydrogen purge on both frequencies. Purging 02 on section one at this time.

HOUSTON Roge.

They're purging oxygen on section one now. Section two looked alright.

Guaymas They're purging section two 02 at this time.

HOUSTON Roge.

Guaymas Everything's holding steady.

S/C Purged the 2, Guaymas. There's still no change on the 2-C AMPHS.

Guaymas Roger. Houston?

HOUSTON Roger.

S/C Guaymas. This is 7. Did notice a change in the main AMPHS Difference here between section 1 and 2 about 6 now. Difference between section 1 and section 2 amp. meter readings about 6 amps now. Section 1 is about 6 higher than 2.

HOUSTON Gemini 7, Houston. How do you read?

S/C Loud and clear, Houston.

HOUSTON Roger. This will be a UHF 6 pass.

S/C Roger

HOUSTON We observe you have the A pump on in the primary coolant load. Could you tell us about when you put that on?

S/C Stand by a second. We put it on at 140:10.

Houston Roger. Is that just to get a little more cooling?

S/C Roger. Frank was hot in the suit, so we put the A pump on for him.

Houston Roger. We know you're coming up on a tracking test at the Cape here; just let me know when we need to stop talking to you for that part.

S/C Roger. Appears, from my position now, that there may be cloud cover over the Cape.

Houston Roger. Gemini 7, you're go for 104-1. We'll get your "no go" information after the Cape pass.

S/C Roger. Will pass up the photo. You were cut out at the Cape Did you say we were "go" for another pass?

Houston Roger. You are go for 104-1.

S/C Roger. 104-1. We have the Cape in sight now.

Houston Roger. Would you give us fuel cell H2 and the quantity read switch?

S/C H2 on.

Houston Did the Pump A help on the cooling problem?

S/C Roger. It helped somewhat, Houston.

Houston Roger. Got the message.

S/C We're tracking the Cape now.

Houston Roger. Tracking the Cape now.

S/C I see they're working hard down there at Pad 19 again.

Houston Roger. Can you actually see people on the Pad with your telescope?

S/C No, we can't Houston.

Houston Roger. Place your TM switch to command.

S/C TM is on command.

Houston And C-band adapter switch to command.

S/C C-band to command.

Houston Roger. Let me know when you finished the task and we will continue.

S/C Roger.

Houston Stand by for your TR, Gemini 7. Gemini 7, standby for your TR update.

S/C Roger. No update yet, Houston.

Houston Roger, we have a little TM problem we are working on. We are transmitting again, Gemini 7. Gemini 7, you can place your quantity read switch to off.

S/C Tracking task complete. No TR yet received.

Houston Roger. We have a problem with our ground equipment. We will update you as soon as we can, either here or possibly at Canarys or Carnarvon.

S/C Roger, understand.

Houston We are going to try one more time here, Gemini 7. Looks like we can't put it in here, Gemini 7, we'll catch you at another station.

S/C Roger.

Houston I'm ready to copy your go--no-go information.

S/C Roger. The main batteries are all 23 volts, 1A, 5 amps, 1B 5 amps, 1C 5 amps, 2A 3 amps, 2B 3 amps, 2C 2 amps. Main

bus 26.2 volts, RCS A 3000, 80 degrees, RCS B 2900, 75 degrees. Left secondary O_2 5400, right secondary O_2 5300.

Flight — Roger. Gemini 7. We tried the TR again and our indication is that it went in correctly. Did you get an update.

S/C — That is affirmative. We got an update.

Flight — Roger. Gemini 7, would you stand by for the Surgeon. He would like to get a couple of question in relation to your last pass.

Surgeon — Gemini 7, this is Surgeon. We didn't get an answer. I'm not sure you heard about this oral temperature at 128 hours just at the beginning of the sleep period on the Command Pilot. Do you have any explanation for that?

S/C — The sun might have shined on it or something, Chuck. I don't know what could have happened.

Surgeon — Okay, and how are you doing with the water story, Frank. Have you got that yet, or --

S/C — We are working on it now. We have been very busy this last pass.

Surgeon — Roger, that's fine. Anytime you get it.

S/C — Roger, we have to go back. We may have sometimes counted each half bunce as an ounce or something, but we will check.

Surgeon — Roger.

Flight — How did your tracking across the Cape go, Frank. Was the weather okay there.

S/C — Yes, it was perfect. There was absolutely no problem.

Flight — Roger. We will let you know on that as soon as we get the

word.

S/C Rog. We would be interested to know if they got any good data off our tracking on the booster.

Flight Gemini 7, I'm not sure we know what you mean by that.

S/C Did Fred receive any of the information he wanted.

Flight Roger, they are very happy about their results.

S/C Okay, thank you.

S/C Flight, what do you want us to do about this section 2C if Stack 2C if it keeps going down and we are not in contact with anyone?

Flight We are working on that Frank. We are considering a longer purge or possibly a purge on just that one stack. They are running a special test on the Sim flight fuel cell at St. Louis. We should have some work on that very shortly.

S/C Remember a purge is never a cure.

Flight Roger. Roger doctor.

Gemini Control here with the spacecraft now over the Central Atlantic that probably wraps up the communications for this pass. At 140 hours 53 minutes into the flight, this is Gemini Control Houston.

END OF TAPE

Gemini Control Houston, here, over the Canary the brief conversation which went like this.

CYI	Gemini 7, Canary
S/C	Go ahead Canary
CYI	You can turn off the transponder now.
S/C	Thank you.
HOU FLIGHT	Canary Islands, Houston Flight
CYI	Go ahead Flight.
HOU FLIGHT	Let's have him do another normal section two purge.
CYI	Now? Affirmative.
HOU FLIGHT	Rog
CYI	Affirmative. Seven, Canary.
S/C	Go ahead.
HOU FLIGHT	They want another section two purge.
S/C	Roger, whate time?
CYI	Now.
S/C	Can you wait until after we get one Apollo landmark after dark?
HOU FLIGHT	THat's fine.

CYI That's okay.

S/C This is seven coming through with a section 2 purge.

CYI Affirmative. Do you want us to monitor if we can get them?

HOU FLIGHT I don't think that's necessary.

CYI Okay.

HOU FLIGHT This is Houston Flight. You might tell the crew that the Cape thinks they tracked the transponder for 2 minutes during that time.

CYI Roger. Seven, Cape said they probably got the transponder for about two minutes.

S/C Rog. Thank you.

HOU FLIGHT Canary LOS

END OF TAPE

A few minutes ago over Kano, Elliot See checked with Jim Lovell on the success of another fuel cell purge. Here's how it goes.

HOUSTON Kano go remote.

KANO Kano remote.

FLIGHT Would you send us an LOS main?

KANO It's on the way.

CAP COM Gemini 7, Gemini 7, Houston Cap Com.

S/C G-7, go ahead.

CAP COM Roger. We'd be interested if you notice any significant change in section 2.

S/C The only change is in the amperage, pulling about two amps. .....during the second purge. It is now reading about 27.2. It looks like it's a little higher than it was before.

CAP COM Roger. We'll continue to watch it.

S/C Rog. We've got a, about a 6 amp difference between section 1 and section 2 according to amperage reading.

CAP COM Roger. We can count.

END OF TAPE

Gemini Control Houston here. The spacecraft is over Northeast Australia. Just a few minutes ago we had this conversation with the Carnarvon station and 7.

CRO Gemini 7, Carnarvon.

S/C This is 7. Go ahead, Carnarvon.

CRO Roger. We have you good on the ground. We also have some information for you, then the process of running an H_2 purge on a single stack at St. Louis. They'll have more information on this test over the States. The one in St. Louis is showing similar characteristics to the one onboard.

S/C Roger.

CRO That's about all we have for you this pass, so we'll be standing by.

S/C Thank you.

CRO Gemini 7, Carnarvon. Is D-7 go?

S/C Roger.

CRO Do you think you can do D-4/D-7?

S/C That's affirmative. We've finished D-4/D-7.

CRO OK, we still don't have anything .....your secondary off.

S/C Did you get one now? We just turned it off.

CRO I will check. Roger, 7, we got it.

S/C Mother is watching.

CRO Roger.

FLIGHT Do they still have primary A on?

CRO That's a primary bus.

FLIGHT Rog.

CRO TM LOS, Flight. Everything looked real good here on the ground.

FLIGHT How about sending us an LOS lean?

CRO Rog.

END OF TAPE

Gemini Control Houston here, 142 hours 6 minutes into the flight. Around the network this morning you have heard a lot of discussion about fuel cell purges. Perhaps some general remarks should be made. Since the beginning of the flight section 2 of the fuel cell has run slightly lower in output than section 1. All in all we are completely satisfied with the output of both sections. But this has been noticed, it is not a problem and we don't think we have a problem in the fuel cells. In section 2, stack C has put out less than the other two stacks, so as a general statement over a period of time it is perfectly normal for fuel cells to decline slightly in output. This takes place slowly at various rates and can eventually make it desirable to cut off an individual stack or two, or perhaps the whole section. Built in redundancy in the system fully takes this into account. Other parts of the system are not affected. The Gemini spacecraft can operate saftly on far less than this total power to killowatts.that the fuel cell system is designed to produce when operating at full capacity. So, we have a very tight spacecraft and we -- it is something like a dog and a bone. Someone sees a little bit of decline here and I think tension may be overly centered on the declining output of that one stack or the performance of stack C in section two. There was additional discussion of the fuel cells over Hawaii and it went like this.

Hawaii Gemini 7, Hawaii Cap Com. We have nothing for you, you need not acknowledge, we show you a go on the ground.

Flight Hawaii, Houston Flight.

Hawaii Houston Flight, this is Hawaii.

Flight Have him place the stack 2C to the open circuit and we want to leave it there for about 15 minutes and we want him to --

S/C	Hawaii, this is 7.
Flight	Go ahead.
Hawaii	Gemini 7, this is Hawaii.
S/C	Did you receive our last transmission, over.
Hawaii	Negative.
S/C	Okay, thank you. Just checking.
Hawaii	Flight, you can continue now.
Flight	Okay, we want to --
S/C	Hawaii, Gemini 7 with a correction for our water report.
Hawaii	Roger, Gemini 7. Go ahead.
S/C	Roger. Our recomputed figures show that the command pilot to date has had 452 ounces of water.
Hawaii	Okay, that was command pilot, 2 days, 452 ounces of water.
Flight	To date.
S/C	No, that is total to date, total water.
Hawaii	Roger.
S/C	The pilot 396.
Hawaii	Roger, Copy all of that?
Flight	Tell him to place the stack 2C to the open circuit and leave it there for about 15 minutes and we will pick it up over the States and we want to know if the voltage stays at 30 volts or better and stable, and if that is the case, then we are going to do a single stack hydrogen purge over the States.
Hawaii	Roger. Gemini 7, Hawaii Cap Com. I have some information for you.

S/C Go ahead.

Hawaii Place your stack 2C switch to the open circuit position for 15 minutes, 15 minutes. Houston will pick it up over the States and if the voltage stays at around 30 volts or better, they will do a single stack hydrogen purge over the States.

S/C Roger. At this time I am going to go to open circuit on stack 2C, we will keep it open circuit. Understand that if the voltage stays at 30 volts or better they will do a single stack hydrogen purge, is that correct?

Hawaii That is affirmative.

S/C Roger, going to open circuit 2C.

Hawaii Roger. Houston, Hawaii Cap Com.

Flight Go ahead.

Hawaii Would you give me a TR hack please.

Flight Roger.

Retro Hawaii, this is retro.

Hawaii Roger.

Retro I'll give you a hack at 22 21 40, 5 seconds.

Hawaii Roger.

Retro 3, 2, 1 MARK, 22 21 40.

Hawaii Roger. FD, this is Hawaii, do you want an LOS main?

Flight Roger.

Hawaii C-band LOS.

This is Gemini Control Houston again. Elliot See is in touch with the spacecraft over Guaymas. That stack C section 2 fuel cell,

since Jim Lovell moved it to the open position is reading 32 volts or more, considerably higher than the cutoff level expected. Let's cut in on that conversation now.

Cap Com ..... line before we start this thing and we want you to monitor it closely during the purge and then after the purge, just turn stacks 2A and B back on.

S/C Right, and Elliot, I want to tell you another thing. We fooled around with this D-5 again and tried to calibrate on Venus and everything else and we couldn't do it.

S/C I tried it too. The conclusion is that the calibration button is down it is always reading red, when it is not down it is always green.

Cap Com Roger.

Cap Com Let's go over this procedure one more time. We will have the crossover open and 2A and 2B will be open circuited, and then we will put 2C back on the line and we would purge hydrogen for 13 seconds.

Flight That is correct Jim, but I think we should put stack 2A back on the line first before you take 2A and 2B off.

S/C Roger, I'll put 2C back on before I take 2A and 2B off, and we are not going to bother with the oxygen at all, right?

Flight That is correct.

S/C And you want to do this purge over the States, is that correct.

Flight We will tell you when we are ready, Jim. What does the voltage look like from Hawaii into here when you were - all this time that you have had it off, has it been steady or

what.

S/C Every time we have open circuited it, it goes up fairly rapidly to 30 volts and then very slowly continues to rise. The last time we talked it was up around 31 and since we have had it open longer now it's 32 and it might be above that. That is as high as the scale goes.

Flight Roger, I copy.

Flight I have some questions about your attempt at MSC-4 yesterday. Did you definitely acquire Kauai?

S/C On that attempt, no. When we first picked up the Islands we could see Hawaii, Molokai and Lanai, but I could never pick up Kauai, I think it was at an oblique angle covered by clouds and we gave the remark, we're almost over Oahu, that's when I thought perhaps that in this position was Oahu even though we knew that the Laser was on Hawaii.

Flight Roger. So you never actually saw Kauai so you could not scan it with the telescope or your eyes or anything.

S/C That's right. We never did pick up Kauai but Oahu, Molokai, and Lanai stood out very nicely.

Flight Roger.

S/C Houston, 7.

Flight Go ahead.

S/C As a matter of interest, affirm that my delta P light finally went out. It has been on for the last several days.

Flight Roger. When did it go out?

S/C Just now.

Flight Roger.

Flight Okay, why don't you put Stack 2C back on at this time and give us a stabilized reading there before you proceed.

S/C Roger, stack 2C coming back on the line. Okay, we are back on the line and 2C is reading 27.8 volts now and the amps are back up to 5 amps, the highest we have seen them in some time.

Flight Roger. Let's let it stabilize there for a minute.

S/C Roger.

Flight What are the other amp readings?

S/C 2A and 2B are both about $2\frac{1}{2}$. This is the situation we had originally for the first 4 or 5 days.

Flight Roger. Let's watch it here for a minute, Jim, and then we will decide about this purge.

S/C Roger.

Flight What do your currents look like now, 7?

S/C Very stablized. 2C voltage at 27.8 and amps, 5 amps on the 2C amp meter.

Flight How about 2A and B.

S/C 2A and 2B read each about 3 amps now.

Flight All right. You have 2A and 2B 3 amps, 2C 5 amps. Is that correct?

S/C That is correct and both sections are balanced.

Flight Roger. How about reading off the A section then.

S/C Roger.

Flight I mean section 1.

S/C 4, 1B about 4 and 1C about 4.

Flight 1A, B. and C are all 4.0?

S/C That is affirmed.

Flight Roger. We want to keep watching here for a minute, 7.

S/C Roger. Houston, Gemini 7.

Flight Go ahead.

S/C We made a couple of quantitative checks on the UHF adapter - or the UHF antennas and it seems that the reentry antenna is just a little bit better than the adapter antenna.

Flight Roger.

S/C Neither one of them are bad though. We have been using primarily the adapter antenna since the platform was powered up yesterday.

Flight Roger. Okay Jim. How about giving me another readout on 1 and 2 amperages.

S/C Roger, section one is reading about $3\frac{1}{2}$ to 4, that is 1A, 1B is about 4, 1C is 4, 2A is 3, 2B is 3, and 2C is 5.

Flight Roger.

S/C The delta P light is still off.

Cap Com Is that delta P light still out Jim.

S/C Roger, still out. You always hear about letting sleeping dogs lie.

Cap Com Yes, we are just about to evoke the Kraft-Hartley act here. You have a TX coming up at you 7.

S/C Received.

S/C If you want us to purge, how about promising us that it won't hurt it.

Flight About promising you say?

S/C Natch.

Flight We haven't purged yet, stand by. If we ask you, we will promise.

Flight Maybe we got something wrong with the amp meter?

S/C It might be the operator. I never can tell.

Flight Gemini 7, we are not going to purge. We are going to leave it like it is.

S/C Roger.

Cap Com Are you ready for today's news with your lunch?

S/C Exciting, go ahead.

Cap Com Mr. Mikoyan resigned yesterday as President of the Soviet Union on grounds of health and age. He was replaced by Nikolai Podgorny. Branch Rickey died yesterday at 83. A big fireball was observed over Lake Erie yesterday. It apparently was a meteorite. Several grass fires were reported in the northern Ohio and Western Pennsylvania area, and we should have more on that later, we will let you know if we do. The Gemini news today is about the preparations for Gemini 6 launch on Sunday. We have talked to them recently and they are in real good shape there. They are through the precount and they are in very good shape. We have a sim set up with Wally tonight. Everyone got a kick out of your message to Tommy Nobis encouraging him to come with the Oilers. A Post sports writer said he knew that Bud Adams had friends in high places, but this is too much.

S/C Outstanding.

Cap Com Before we lose you 7, we would like to get another set of readings on the fuel cell. I'll call you when we need that.

S/C Did Dr. Berry get all the water information from Hawaii, Elliot?

Cap Com Yeah, we got it and they are now happy, Frank.

S/C Good.

Flight If you can conceive of that.

S/C Roger.

Surgeon Frank, we got the totals and we are perfectly happy with them and we won't have to go back and jiggle your things. We will jiggle them on the ground.

S/C Roger.

Flight I don't know about you, Frank, but I wonder what he is going to jiggle.

Cap Com Were you able to see Hawaii at all on that last pass to get some idea of what the weather is going to be like this time?

S/C Elliot, we are drifting with the shutters up to keep cool.

Cap Com Roger, so you didn't see Hawaii then last pass.

S/C Negative.

Cap Com Roger.

Flight Gemini 7, Houston. Would you comment on your cooling situation. We were wondering about your last comment there. Are you able to maintain adequate cooling with the present pump configuration?

S/C This is Gemini 7. Roger, we are both fine. Of course, I'm without the suit and Frank is with it. We have the primary A pump on now.

Flight Roger 7.

S/C You aren't going to have to work a double shift today, are you Elliot?

Cap Com We'll manage.

S/C How are you holding up after these 14 or 7 days.

Cap Com I appreciate your asking. I haven't even thought about it.

S/C How about CM3 and 4.

Cap Com They are doing fine. They are having a ball.

Cap Com — How about CM1 and 2.

S/C — We are fine, I guess the person we are really worried about is the old man Flight Director.

Cap Com — We are keeping an eye on him.

S/C — He is missing all those golf games.

Flight — That doesn't even deserve comment.

Flight — Okay, why don't you give me another readout on those stack currents, Jim.

S/C — Roger, coming up. 1A is 4 amps, 1B is 4½ amps, 1C 4 amps, 2A 3½ amps, 2B 3½ amps, 2C is slightly over 5 amps, about 5½ I guess.

Flight — Roger, we will watch it for awhile, thank you.

Flight — Rog. Go ahead.

Surgeon — Say I'm going to check with them on this nose on the next pass. They are still sounding pretty nasal and I think what I would really like to do is try to get their noses moist with some of this lotion and then to use the Actifed on one of them and see what happens. It is at least worth a whirl and Jim sounds the worst and I think we might try him on an Actifed and see what he does, see if it clears it up.

END OF TAPE

This is Gemini Control. 142 hours, 47 minutes. A few minutes ago we called Seven through Ascension. Here's that conversation.

ASCENSION Ascension LOS. U. S. has a message.

HOUSTON Gemini 7, Gemini 7, Houston.

S/C This is 7. Go ahead.

HOUSTON Sorry to bother your lunch, Jim. Could you give me another set of read outs on the stack amperages?

S/C Roger. We're now reading 3.5 on 1A, 4.on 1B, 3.5 on 1C, ...(Garble). on 2A, 3 on 2B, and ....(Garble)... on 2C.

HOUSTON I did not copy 2A and 2C.

S/C 3 - 2A, and 4.9 on 2C.

HOUSTON Understand about 4.9 on 2C. Also, I'd like to tell you that the MSC 4 for Hawaii next pass is deleted due to weather at Hawaii.

S/C This is Seven. Understand MSC 4 is deleted.

HOUSTON Also, MSC 4 for Ascension on the following rev is deleted because they have not received all the equipment they require there to make their repairs; so, it looks like we won't make that one there again today. I'm sorry.

S/C Roger. Understand

ASCENSION LOS, Ascension.

END OF TAPE

On rev 90 over Australia. Here's the conversation with 7, Carnarvon.

CRO Gemini 7, UHF test. 1, 2, 3, 4, 5, 4, 3, 2, 1.

S/C There's an aurora. I saw an aurora for the first time. It's very beautiful.

CRO Jim, you read yours now.

S/C 1, 2, 3, 4, 5, 4, 3, 2, 1.

CRO .....right.

S/C Affirmative.

CRO Hawaii..

HAWAII Go ahead.

CRO According to our flight plan, recorder No. 1 should be off. We show it still on.

HAWAII Right, Carnarvon.

CRO Should be off. Is that affirmative?

HAWAII That's affirmative.

CRO OK, as soon as they get through with the test, I'll go to it.

HAWAII Roger. Carnarvon?

CRO Go ahead.

HAWAII He's got me blocked out on the UHF. The only way I can get to him is on the HF. If you

want to go to him on HF, tell him to turn the recorder off and we'll go to him over Hawaii.

CRO Go ahead and catch it over Hawaii.

HAWAII We'll catch it over Hawaii.

CRO Rog. Hawaii.

HAWAII Hawaii.

CRO Do you read we want to turn that recorder off when he gets over your site.

HAWAII That's affirmative. We copy that.

CRO Rog. TM LOS.

END OF TAPE

This is Gemini Control, Houston, at 143 hours, 43 minutes into the flight. Over Hawaii a few minutes ago, some additional theory and a good explanation, perhaps, of what's been going on in that Section 2, Stack C of the fuel cell was passed up to Gemini 7. It goes like this:

HAWAII Gemini 7, Hawaii Cap Com.

S/C Alright Hawaii, Gemini 7.

HAWAII Okay, you're looking real good down here. How are you doing?

S/C Very good.

HAWAII Okay. You too busy to copy a flight plan update?

S/C Well, we're a little busy right now. Could we wait off a minute?

HAWAII Surely. Do you want to copy it later here, or over the States? Just let me know.

S/C I'll give you a call when we're through here.

HAWAII Very good. I've got a long pass.

S/C Roger. Be glad to now, Hawaii.

HAWAII Okay. Very good. MSC 2 and 3 144:20:00. Sequence 02. Off at 159:00:00. At 144:55:00, you'll make a cabin temperature survey. 6 - 145:27:00. Sequence 02, 03, and 04. Take several pictures. 9 - 145:51:00. Sequence 04. Perform note procedure described after mode listing. 146:46:00, crew status report, command pilot, at Hawaii. 147:19:00, crew status report on the pilot at the RKV. 148:03:00, a PLA update at the CSQ. 148:22:00, flight plan report at Hawaii. 149:00:00, biomed recorder number 2 to "continuance". Off at 159:00:00. Did you copy all that?

S/C Got it all.

HAWAII Okay. Very good. We've got nothing further for you. Ge standing by if you need us.

S/C Thank you.

HOUSTON Oh, you might tell him what Weber has to say about the fuel cell.

HAWAII Okay. Let's make sure I've got it right. They took Stack 2C up into open circuit. Move the load from the cell, right?

HOUSTON Affirmative.

HAWAII And, this relieved the pressure from the water that was in the cell, is that right?

HOUSTON Well, it just stopped producing water and allowed the pressure that was in there to drive the water that was in there, or at least some of it, out.

HAWAII Okay. Gemini 7, Hawaii.

S/C Go ahead.

HAWAII McDonald...(Garble)...that's Mr. Weber, has got a theory on what's going on up there. They claim when you put Stack 2C to the open circuit, you remove the load from the cell. The water pressure was relieved from the cell and it kind of cleared it out of there, and that's what's solving your problem.

S/C What you're suggesting is that if it happens again probably a simple procedure will solve it again.

HAWAII Yea. But, I think that you'd better hold up on doing that until we give you the word.

S/C We don't need you now. It's running perfect.

HAWAII I mean if it happens again.

S/C Don't worry, we will.

HAWAII Okay.

S/C When are you going to get some clear weather down there so we can see your Laser?

HAWAII I don't know. It's been raining for a couple of weeks. Right up on top of the mountain here, it rains all the time.

HOUSTON Flight to Hawaii.

HAWAII Go ahead.

HOUSTON Okay. We're showing that stack as reading 3.87 amps on the ground. And the other two are reading 2.67 and 2.75.

HAWAII Roge.

HOUSTON It's just the opposite way. It should be 2.75 and 2.67.

HAWAII Roge.

HOUSTON Send us an LOS main.

HAWAII Will do.

S/C Hawaii, we're getting bad drop outs under C-Band beacon. It's probably this attitude.

HAWAII Roge. LOS out, Hawaii.

HOUSTON Roger, Hawaii.

Gemini Control here again. The spacecraft is just south of the Arizona, Mexico line at this time. We've not had a call yet from Elliot See here, but we expect one momentarily. We'll stand by for it. The flight plan is completely clear this pass across the States. And, as it starts it's swing down across the Atlantic, the magnatometer and the spectrometer, MSC 2 and MSC 3 experiments will be activated. Over east of Carnarvon on this rev, the crew will conduct another cabin temperature survey. We'll stand by and try to pick up the first words as they occur. The Cap Com at the Texas station down at Corpus Christi has just signaled the craft that they need not acknowledge. He's advised we have them "go" on the ground, and it's really doubtful we will have any conversation during this pass. This is Gemini Control, Houston at 143 hours, 50 minutes into the flight.

END OF TAPE

Gemini Control Houston here, 144 hours 5 minutes into the flight. Toward the tag end of that State side pass, Elliot See finally did call 7 and Chuck Berry joined in the conversation. Dr. Berry, a little bit concerned about the dryness, apparently, in Jim Lovell's nasal passages, suggested that he take one of the pills onboard in the medical kit and Lovell talked him out of it. Here is that conversation.

Cap Com — Gemini 7, Houston.

S/C — Go ahead Houston.

Cap Com — We have a couple of flight plan update items if you can get your book out.

S/C — Ready.

Cap Com — Node, time 144 56 20, rev 91, 136.7 degrees east, right Ascension 10 50 45, time 144 44 14, purge fuel cells at Carnarvon. We have a TX coming up now, Gemini 7. 7, did you copy, a TX coming up.

S/C — Roger.

Cap Com — Next item is 148 55 00, purge fuel cells at the RKV.

S/C — Roger.

Cap Com — Stand by for the Surgeon, Gemini 7.

Surgeon — Gemini 7, this is Surgeon. Have you had any dandruff problem up there, Frank?

S/C — ....

Surgeon — Say again.

S/C — No, No, negative.

Surgeon — I see show.

Cap Com — If [illegible] trouble with his hearing 7, you might help him [illegible].

S/C Roger.

Surgeon Jim, I'd like to talk to you, both of you, a little about this nasal stuffiness and we would like to have you try something here. Did you use the skin cream from those little bottles, did you try some of that last night before you went to sleep?

S/C Yes we did and it works pretty good.

Surgeon Okay, I'll tell you what I would like to have you do to see if we can clear this up some during the day is I would like to have you keep using that you don't dry out. Just keep your noses moist with that all the time and we can just use it for that purpose. We will probably have plenty to go the route. Another thing I'd like to have Jim try because he sounds like he is more plugged, I'd like to have him try one of the Actifeeds, item E and it will last about 4 hours and we can get a trial to see if it will clear up that nasal stuffiness for you. The main thing keeping your nose moist with the lotion too. Do you read?

S/C I'll do it if it is in the field of medical research, otherwise, I'd perfer not to.

Surgeon Okay, you feel that the stuffiness isn't enough to bother you, is that right, Jim?

S/C Chuck, that cream you gave me is working very nicely. I put some more in my nose this morning and I expect a certain amount of stuffiness because of the oxygen content, but other than that we are fine.

Surgeon Okay, if you don't feel that the stuffiness is bothering you as far as breathing is concerned, there is no real reason to have to do this, and I think it would clear up the stuffiness for you and so we know it is there and I'm not directing you to take it, I think it is one of these choice things that we can do if you want to do it. If you feel that the stuffiness isn't bothering you, we won't do it.

S/C Roger, thank you. If I get more stuffy, I'll try and take one.

Surgeon Rog.

S/C Chuck, have you got a minute.

Surgeon Yes sir. Surgeon standing by, Frank.

S/C I don't have any problems, but my brother-in-law hurt his back moving a piano. Can you prescribe something for him.

Surgeon Where is he.

S/C I'm just kidding you. We are in good shape, Chuck.

Surgeon Very good. The gals are in good shape down here too.

S/C Is everything all right at home.

Surgeon Everything is very fine, Frank. I talked to both Sue and Marilyn this morning and Sue is fine and Marilyn is out having coffee again, having lunch. They are fine.

S/C I told her I am doing my part, now she has to do hers.

Surgeon Not yet, not for another week or so anyway.

S/C Hey Chuck, I want to tell you one thing. There is just no comparison between suits on and suits off. Boy, I bet you half the problems you had with people getting dehydrated so is because of these darn suits.

Surgeon Yeah, well, we are in firm agreement with that statement, Frank,

and it is pretty obvious, I think that's -- do you think that is part of your problem with sleep too, Frank, the suit on.

S/C I'm certain that that is part of my problem. I even buttoned it up last night trying to see if that would keep me cool, you know, with the hood down and everything, and there is just no comparison between Jim's comfort and mine.

Surgeon Okay, well, you keep us posted and --

Flight Roger, we copy Gemini 7.

S/C Houston, this is Gemini 7. On that last pass over Australia we saw a brilliant display of the Aurora and we would like to take some pictures this time if we could afford a couple of squirts of attitude fuel.

Cap Com Director says have at it.

S/C Thank you.

END OF TAPE

This is Gemini Control on the 91st rev, with the spacecraft due north of Australia. The last pass with Carnarvon was a very brief encounter, conversational encounter, but an interesting one. Here in Houston, 10,000 miles away from the spacecraft, our Guidance and Navigation Control Engineer, Arnie Alldredge noticed that one of the circuit breakers was in the wrong position. He was reading Carnarvon data. Carnarvon Cap Com was advised. He talked to Lovell, and sure enough, Lovell confirmed it was in the wrong position. He switched it to the right position. We've missed two attempts at Laser experiments in the last rev around the Earth. Weather clobbered us in Hawaii again; and at Ascension, minor equipment troubles knocked us out there for the first good attempt on this MSC 4 Laser experiment. Here's the conversation that went on between Carnarvon and 7.

CRO Gemini 7, Carnarvon.

S/C Go ahead Carnarvon. This is Gemini 7.

CRO Roger. We're waiting for your fuel cell purge.

S/C Roger. Will do now. Do you read?

CRO Roge. Flight, Carnarvon.

HOUSTON Go ahead. This is AFD.

CRO Okay. Parameter HF03, bit 3, HF04, bit 4. Ring B. Yaw right. We have a solid indication on the ground. Confirmed in the bit stream.

HOUSTON Okay. HF03 and 4.

CRO That's affirmed.

HOUSTON Okay. Send LOS main, Carnarvon.

CRO Roger. Looking good on the purge, Flight.

HOUSTON Roger. What are you doing back there? Yea, I'm fighting a ... battle up here, so stay at it. Carnarvon, AFD.

CRO Go ahead, FD.

HOUSTON Have him check his RCS B-3 circuit breaker.

CRO RCS B-3 circuit breaker?

HOUSTON Roger.

CRO Gemini 7, Carnarvon.

HOUSTON That's yaw right, Carnarvon.

S/C Go ahead Carnarvon.

CRO Roger. I'd like for you to check your RCS B-3 circuit breaker.

S/C Roger. We lost it.

CRO Roger. That was all. Thank you very much.

S/C Roger, Gemini 7.

CRO We lost it. The circuit breaker was up.

S/C Purge complete.

CRO Roger, Gemini 7. Did you position your quantity read switch ... O2, please?

S/C Roger.

CRO Okay, to fuel cell O2. To fuel cell H2, please.

S/C Roger.

CRO Okay. To the "off" position. Hey, you're looking good here on the ground, Gemini 7.

S/C Thank you.

CRO AFD, Carnarvon LOS.

HOUSTON Roger Carnarvon.

END OF TAPE

This is Gemini Control Houston. We're on the 91st rev between Hawaii and the West Coast. Over Hawaii the last time, the Cap Com advised 7 that they would stand by, they need not acknowledge, they did acknowledge but there was no further conversation. We do not expect any conversation as the spacecraft swings down across Mexico then down over Yucatan and then across the Northeast Coast of South America. No flight plan items planned, and the crew is taking a post-luncheon break and just generally resting. They do have an S-6 to perform in the next few minutes in the area of Baha, California, in the Gulf of California. The only activities scheduled until they get down in the area of the Rose Knot parked off the east coast of South America at which time the flight plan calls for a D-9 experiment. D-9 is the simple navigation experiment where they take sightings off stars. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, Houston here. We're 145 hours, 47 minutes into the flight. The spacecraft over northeast South America. A very few minutes ago, Elliot See called Seven, and gave them the word on the outcome of a major suit meeting. Suit Configuration Meeting has been going on for most of the day here in another part of this building. The upshot of that meeting was the belief that the crew should go ahead and switch suits. We should...The feeling is that Lovell should get back into his suit, and Borman should take his suit off. This proposal was passed up to the crew, and it was suggested that they go ahead and do this shortly after their D-9 experiment which they are to perform in a very few minutes, off the Rose Knot Victor in the South Atlantic. We have the tape conversation between Elliot and the crew. We'll play it for you now.

HOUSTON Gemini 7, Gemini 7, Houston Cap Com. Over.

S/C This is 7. Go ahead, Houston.

HOUSTON Roger, 7. We're just checking out a new communications circuit. We just want to make sure you can read me, and we'll be standing by here. And, for your information, we're always standing by, and any of the remote sites, too, Tananarive, and so forth throughout the flight, in case you want us.

S/C Roger. You're coming in loud and clear, with no background noise.

HOUSTON Okedoke.

ANTIGUA ...(Garble)..., Antigua.

HOUSTON Gemini 7, Houston Cap Com.

S/C This is 7. Go ahead.

HOUSTON Jim, we would like to have Frank, ...correction..., have you get back in your suit at this time and have Frank get out of his. And our plan is to leave you in this mode through the rendezvous and docking. After that, the rendezvous and the station keeping, and after that, the thought would be to consider the matter further as far as the suit configurations are concerned. We feel that

this is an important step in carrying the suit situation further. Do you copy?

S/C Roger. This is 7.

HOUSTON Go ahead 7.

S/C Do you wish to program out a suit plan at this time?

HOUSTON Whenever you think is the best time. Whenever you can work it in the flight plan here. We just got this word, so we have not programmed it in the flight plan yet.

S/C Roge. I'd like to get some instructions.....It's going to take a little while to get squared away here..So I'd like to have it worked into the program for the Hawaii pass.

HOUSTON Roger, 7. It's like after the D-9 at the RKV you might have some period in there, about 45 minutes or so before the crew status on the command pilot at Hawaii. It looks like that might be a good spot.

S/C Roger.

END OF TAPE

This is Gemini Control Houston here. Over the Rose Knot Victor, we called the crew again got into the suit discussion. Borman apparently feels that he would like to continue as is and we will have that taped conversation for you. There has been additional consideration given to the point, the crew will be contacted at a later station, Tananarive, or perhaps the CSQ on later in the pass and will be advised to proceed with the suit change. Here is the conversation as it transpired over the Rose Knot Victor.

RKV Gemini 7, RKV Cap Com. You need not acknowledge. All systems are go and we are standing by.

S/C Roger.

RKV RKV Cap Com.

Flight Go ahead RKV.

RKV Did you want PCM counts on cryo tank pressures?

Flight Roger, give us PCM counts.

RKV Okay.

S/C RKV Cap Com, this is Gemini 7.

RKV Go ahead Gemini 7.

S/C Would you ask Houston please if it would be acceptable if we remained in our present suit configuration until tomorrow when Jim will suit up for the rendezvous and I'll remove the suit after rendezvous. I prefer not to have us make so many suit changes in the spacecraft with danger of hitting the switches (garbled) .... if it would be acceptable to them, we will delay the switching of suits until after rendezvous.

RKV Okay.

S/C After rendezvous tomorrow.

RKV I'll check with Houston. Stand by. Houston Flight, RKV Cap Com.

Flight Go ahead, RKV.

RKV Did you copy that Flight?

Flight Negative, will you give it back to me.

RKV Okay. Frank would like to hold off on making the suit change until after the rendezvous tomorrow. Is that acceptable to you?

Flight Rendezvous isn't tomorrow. It is the day after tomorrow.

RKV Well, that's what he told me. He wanted to hold off until tommorrow on that.

Flight He said until after rendezvous.

RKV Yes, that is what he said. The first thing he said was that he want to hold off until tomorrow. I'll go back to him on this. Gemini 7, RKV.

S/C Go ahead.

RKV Did you say that you want to stay in the present suit configuration until tomorrow, is that affirmed?

S/C That is affirmative. At which time Jim Lovell will suit up.

RKV Okay. Did you copy that Flight?

S/C We are afraid of damaging bio-med communications and the chance of getting misadjusted and so on.

RKV Roger. Flight, RKV.

Flight Go, RKV.

RKV Did you copy that from them.

Flight Roger. You can advise them that Chris Kraft wants them to get back in the suit.

RKV Roger. Gemini 7, RKV.

S/C Go ahead.

RKV Chris would like you to get back into your suit.

S/C I'm not out of it, I'm still in it.

RKV I think he would like you to change.

S/C Well, we would have to change again then tomorrow, RKV.

Flight Negative, that isn't until --

S/C I'm comfortable, I'm all right. I'm not comfortable, but I'm all right. It is a big job for Jim to get in and out of the suit. Once he gets in he probably won't want to get out again and I'll get out after tomorrow.

RKV Roger. Did you copy that, Flight.

Flight Affirmative.

RKV Flight, RKV.

Flight Roger, RKV.

RKV Okay, do you want to give them an update on this suit situation over the next site which would be CSQ?

Flight We might talk to him over Tananarive.

RKV Okay. Gemini 7, RKV.

S/C Go, RKV.

RKV Roger, we'll discuss the suit situation with you over Tananarive.

S/C How is everything on the RKV tonight?

RKV Real nice.

S/C How far out to sea are you all?

RKV You won't believe this, but we are anchored 35 miles off the Coast, 180 feet anchor.

S/C That's nice.

RKV RKV has LOS.

That wraps up the RKV conversation. Here in the Center we are reconfiguring for simulation with spacecraft 6 down at the Cape. They will fly a rendezvous simulation, we expect to pick that up at about 30 minutes. For the period during the simulation, the data from 7 will be handled manually, that is, it will be relayed in here from the stations by teletype rather than over the high-speed bit-circuit data circuit lines that exist. At the 92nd rev in the flight coming up on South Africa, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston at 146 hours, 15 minutes into the flight. Now we did contact 7 over Tananarive. Elliot See called them. Chris Kraft joined in the discussion. There was some additional discussion of the suit situation and it has been resolved that the crew will change. Lovell put his back on. Borman will take his off. Here's the tape of that conversation.

CAP COM Houston Cap Com, how do you read?

S/C Read.....

CAP COM Gemini 7, Gemini 7, Houston Cap Com, how do you read?

S/C Gemini 7, read you loud and clear.

CAP COM Roger, Gemini 7. We copied your comments over RKV. We would like to reiterate that we feel it is important for you to change suit configurations at this time.

S/C Let me explain my position on this. I've had three changes in 24 hours. ~~Three~~ me out, and then back in, and now ~~I'm~~ Jim in. I would rather wait 24 hours and then get out. It's not an easy job to change your suit in a spacecraft.

CAP COM Jim, Frank, I think you may be confused on your days here. The rendezvous is not tomorrow.

It is the following day.

S/C Roger, but we thought we'd get suited tomorrow night to get ready for the rendezvous so we didn't have to fool around Sunday morning.

CAP COM What we have in mind is for Jim to put on his suit now and you to get out of yours at this time and then in preparation for the rendezvous you would get back in.

FLIGHT And not until Sunday morning, Frank.

S/C OK, if that's what you want, we'll do it. But I sure would just rather stay the way we are. Since we put this whole thing on, I feel uncomfortable and I'm not kidding you, it's tough to get in and out of this suit -- especially for Jim.

FLIGHT Frank, I think you understand what's going on down here and the only way I feel that we're going to get both of you out of the suit is to have you get out, Frank, and Jim get back in again.

S/C Aye, aye, sir, we'll do it. If you want us to, that's it. We'll do it. I just wanted

to explain our position. We'll change tonight.

FLIGHT We understand completely, Frank.

END OF TAPE

This is Gemini Control. We are now 147 hours 32 minutes into the flight of spacecraft Gemini 7. At this time the spacecraft is on its 93rd revolution around the earth, and is just approaching the southernmost tip of Africa. Here in the Mission Control Center the White Team of Flight Controllers is on duty, having relieved the Red Team something like an hour or so ago. However, due to setting up the Mission Control Center here for a simulation of the Gemini 6 flight which is due to come up sometime this evening, we have delayed our flight cast to you. We have had a checkout flight with Gemini 6, a checkout flight which precedes the simulation, and on that checkout flight Alan Shepard and John Young manned the Gemini 6 spacecraft. We did take it to orbit. Again, the prime crew is expected to be aboard the Gemini 6 when the simulation does start. We now will play back for you come of the voice tapes that were made with Gemini 7 crew and the tracking stations at Hawaii and the Rose Knot Tracking Ship. This is Gemini Control.

HAW Gemini 7, Hawaii Cap Com.

S/C Go ahead Hawaii, this is 7.

HAW Okay. We're showing you GO here on the ground. How're you doing?

S/C Oh, we're doing great, we're doing great.

HAW Okay. We've got a valid oral temp ..... waiting for your blood pressure.

S/C Roger. Blood pressure coming down now.
Cuff is full-scale.

HAW We have a good blood pressure. Standing by for your exercise.

S/C Exercise starting now.
Exercise finished. Blood pressure coming down.
Cuff is full-scale.

HAW A good blood pressure. Standing by for your food, water, and sleep report.

S/C Hey, this Gemini 7.

SURGEON Seven, this is Hawaii Surgeon, standing by for your food, water, and sleep report.

S/C Roger. The Command Pilot has had today the total of 486 ounces of water. Uh, we had an additional meal since the last time, Day 6. Meal B, but he did not eat three egg bites. Had a total of column 5 of 15, total of column 6 of 3. Pilot had a total of 417 ounces of water. He had meal 6, or Day 6, Meal B, he did not eat two egg bites and he's had 15 in column 5 and 2 in column 6.

HAW Roger, Gemini 7.

HAW Cap Com. We have completed the tape dump.

FLIGHT Roger.

HAW Gemini 7, Hawaii, if nothing further, we'll be standing by.

S/C Thank you.

HAW C-band LOS at Hawaii.

FLIGHT Roger, Hawaii.

SURGEON Gemini 7, RKV. We copy your oral temp. You can start your blood pressure.

Gemini 7, RKV Surgeon, we did not get full-scale.

We have full-scale.

RKV Systems are GO, flight.

FLIGHT Roger, RKV.

SURGEON Gemini 7, we have your blood pressure. Standing by for your exercise.

S/C ..... pressure coming down.

SURGEON Rog. Cuff is full-scale. Seven, we have a valid blood pressure. Has there been any change in your food and water status, since Hawaii?

S/C Gemini 7. Negative, flight.

SURGEON Ro-.

FLIGHT ... Flight.

RKV Go ahead, flight.

FLIGHT Roger, RKV..

RKV Flight, RKV.

FLIGHT Go ahead, RKV

RKV We've lost all L-band data from Command Pilot. Roger, Command Pilot.

FLIGHT You've lost Command Pilot data?

RKV L-band data, yeah, about a minute ago.

FLIGHT Okay. Maybe they're changing.

RKV Could be. RKV has LOS.

FLIGHT Roger, RKV.

Systems GO flight, I transmit in TX.

FLIGHT Got an OAMS manual sum for us, Bill?

RKV Roger.

END OF TAPE

This is Gemini Control. We are now 148 hours and 10 minutes into the Mission of Spacecraft Gemini 7. At this time our spacecraft is passing over the Pacific on it's way toward the Hawaiian tracking station. It is on its 93rd revolution around the earth. A few minutes ago we had voice communication between the crew and the Coastal Sentry tracking ship. And at this time we will play back the taped voice communication.

CSQ . . garbled . . EKG on the pilot . . .garbled . . is out.

Flight Roger. Probably changing suits Chuck.

CSQ Roger, Flight.

CSQ Gemini 7, CSQ Cap Com.

S/C . . garbled . .

CSQ Roger. I have your PLA update when you are ready to copy.

S/C ... garbled. .

CSQ Say again.

S/C Standby a minute please.

CSQ Roger. Also like to get a propellent quantity reading and an OAMS source pressure reading.

S/C . . garbled . .

CSQ I copy. 26 percent . . garbled . .

S/C . . garbled . .

CSQ Okay, the REC . . garbled . . is just the same . . garbled. Okay, area 95-3 1505255. Area 96-3 1522820. Area 97-Bravo 1540453. Area 98-Delta 1550228. Area 99-Delta 1563803. Area 100-2 1581132. That's broke into the hundreds.

S/C Roger.

CSQ Area 101-2 1594733. Area 102-1 1611554. Area 103-1 1625124. The weather is good in all areas except 96-3. Weather is marginal. Do you copy?

S/C Roger. We copy.

CSQ All systems are go here on the ground and that is all we have. We are standing by.

S/C Thank you very much.

CSQ Roger.

S/C . . garbled . .

CSQ Roger, will do. Flight, CSQ Cap Com.

Flight Flight CSQ.

CSQ Did you copy down the TAC?

Flight That's affirmative.

CSQ Do you have anything at this time you want to pass up?

Flight Say again Chuck.

CSQ I say do you have anything that you want to pass up?

Flight No we are going to try to get it up to them over Hawaii and if we can't get it up to them there we will get it over the RKV.

CSQ Roger. Flight advises that they will talk with you about the stack 2 Charlie over Hawaii or the RKV.

S/C Thank you.

END OF TAPE

This is Gemini Control. Gemini 7 is 148 hours and 20 minutes into its flight on its 93rd revolution. Gemini 7 is approaching Hawaii from the northwest and the crew is reported in excellent condition. All the spacecraft systems are reported as GO and the crew is preparing to make contact with Hawaii and begin a period to eat their supper. Let's tune in on that conversation when it's picked up by the Hawaiian Tracking Station, live.

This is Gemini Control. We are waiting for voice contact between the Gemini 7 spacecraft and Hawaii. The time of acquisition is any moment now.

HAW Hawaii is TM solid.

FLIGHT Roger, Hawaii.

HAW Gemini 7, Hawaii Cap Com.

S/C Go ahead, Hawaii, Gemini 7.

HAW Roger, we show you GO on the ground. What is your status in the spacecraft?

S/C We're going on. Jim is in the suit and I'm out of it.

HAW Roger.

S/C Hawaii, Gemini 7. I have a flight plan report if you're ready.

HAW Roger, standing by.

S/C Roger. We made one more frame of dim-light photography today. We've used 20 frames from the third magazine, that's magazine C, of S0217, and one additional tape cartridge. On D-9, Sequence 4, we used - we completed 'em but we used two different stars, Rigel and Sirius and we did the third part of that Sirius to Sirius.

HAW Roger.

S/C And we also sighted a brilliant Aurora on top of Australia but we were unable to photograph it. We were unable to get the Nadir picture of Apollo Landmark 85 because of cloud coverage. That's about it for today.

S/C Everything that's been scheduled has been accomplished and I won't report on that because you'll already have that anyway.

HAW Roger. I have some information for you if you're ready to copy.

S/C Go ahead.

HAW Roger. Your status on the electrical and fuel-cell will be passed to you over the RKV, prior to your sleep period.

S/C Thank you.

HAW The values for you to hold on your fuel-cell hydrogen will be passed to you over RKV.

S/C Thank you.

HAW You will also have the UHF 6 over the RKV.

S/C Roger.

HAW And if you've got a little more time I can give you your OAMS status.

S/C Go ahead. We've got plenty of time.

HAW Okay. You have a - 56 pounds of fuel remaining. You have more oxidizers than you could possibly use. This means that you have an actual 31 percent remaining and your onboard indications should be 27 percent. That's 27 percent. We're evaluating what we want you to try to accomplish between now and the end of the mission, and we'll brief you on that tomorrow.

S/C Roger. Will you tell them that we prefer to save 2 pounds a day for attitude so we don't have to drift the last few days of the mission. Two pounds a day for attitude, please.

FLIGHT Roger. You can advise them Hawaii, that that is already included in their budget.

HAW Roger. That is already included in your budget.

S/C Thank you.

Are you still cloudy down there, Hawaii?

HAW That's affirmative.

S/C When does it clear up down there?

HAW Seldom. It's been raining and cloudy for almost two weeks now.

S/C That's too bad. We sure want to get that laser in.

HAW Well, maybe we can make it tomorrow or so.

S/C We'd really like to.

FLIGHT Hawaii Cap Com, Houston Flight.

HAW Houston Flight, this Hawaii Cap Com.

FLIGHT Roger. Could you give me a readout, TM readout, on Main Bus No. 2 current, and Stack 2A and Stack 2 Bravo.

HAW Roger, stand by.

HAW Tape dump complete at Hawaii.

FLIGHT Roger, Hawaii.

Good pass, Bill.

This is Gemini Control. You heard the Command Pilot of Gemini 7, Frank Borman, talking to the Hawaiian Tracking Station on his 93rd revolution. The time is now 148 hours and 28 minutes into the flight of Gemini 7. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are 148 hours and 54 minutes into the flight of spacecraft Gemini 7. At this time Gemini 7 is passing over South America and will shortly start its 94th revolution. I believe the 94th has started. Let's listen in now and we will hear some live communication between the spacecraft and the Rose Knot tracking ship.

RKV Gemini 7, RKV.

S/C Go ahead RKV.

RKV Roger. We are standing by for your purge.

S/C . . garbled . .

RKV Roger. Place your quantity read switch to ECS O_2.

S/C Roger.

RKV Fuel cell O_2. Now fuel cell H_2. Now your quantity read switch to OFF. I have a map update for you if you are ready to copy.

S/C Stand by please. Go ahead RKV.

RKV Load 1505726, rev 95, 44.3 degrees east, right Ascension, time 10:43:13.

S/C I have it, thank you.

RKV Your next fuel cell purge after you wake up will be at carnarvon on rev 100 at a g.e.t. of 159:18

S/C Got that.

RKV We'd like to pass along at that time rules for the cryogenic pressures. We'd like your ECS heater to be OFF. Fuel cell O_2 heater to AUTO, and your fuel cell H_2 heater OFF. We'd

like you to pump up your fuel cell H_2 to 510 psi. And your minimal for the night will be 380.

S/C Roger, 380.

RKV Would you give us a count on the water gun?

S/C Stand by.Water gun reads 2402.

RKV Roger, could you look in your log and see what you figures are for total water consumption for both the pilot and command pilot?

S/C Stand by please.

RKV The reason we want these figures is it gives us a real good handle on the efficiency of the fuel cells.

S/C Okay. The pilot has used 417 ounces of water.

RKV Rog.

S/C Command pilot 486.

RKV Roger.

S/C . . garbled . . count off the gun is what that means.

RKV Roger. Would you place the biomed recorder no. 2 to continucus?

S/C Say again.

RKV Biomed recorder number 2 to continuous.

S/C Roger. Do you have an initial reading on the water gun?

RKV Negative, go ahead and give it to us.

S/C 628.

RKV 628.

S/C Negative 528.

RKV All right 528.

RKV We'd like to give you a report on your fuel cell status.

S/C We'd be happy to hear it.

RKV Okay. After the open circuit check of stack 2-C it is again picking up more than its share of the load. The present theory is that it will probably become saturated with water again sometime during the mission. The telemetry will indicate this approximately 10 hours before it is necessary to go open circuit on that cell. Now this should prevent ground controller from having to wake you up during the normal sleep period.

S/C Will you please pass the message to Houston that we would be happy to wake up at any time in order to take care of that cell.

RKV We figured you would. Okay, your cryo status - telemetry indicates your cryo usage rate is still less than nominal. Good shape there.

S/C Very good.

RKV The ECS O_2 is predicted to vent at 400 hours and the fuel cell hydrogen tank is still expected to vent at 300 hours.

S/C . . garbled . .

RKV Your cryo quantity expected at the end of 14 days will be ECS O_2, 40 percent, fuel cell O_2 will be 33 percent and fuel cell H_2, 39 percent.

S/C Roger . . garbled . .

RKV Say again. I didn't copy.

Flight RKV Cap Com, Houston Flight

RKV Houston Flight, RKV.

Flight Roger. We'd like to ask the crew how the suit exchange went.

RKV Roger. How did your suit exchange go?

S/C . . . garbled . . .

RKV I can't read it for you. He is awfully noisy now.

Flight Roger.

S/C . . garbled . .

RKV You are coming awfully garbled now, Gemini 7.

Flight I believe he said the suit exchange took approximately 20 minutes.

RKV I couldn't read him flight. Okay, I think we've got all the items completed.

Flight Roger. How did the purge go?

RKV Purge went well.

Flight Roger.

This is Gemini Control. We are now 149 hours and 2 minutes into the flight. We have just heard live voice communication between spacecraft Gemini 7 command pilot,Frank Borman, and the Rose Knot tracking ship. Our spacecraft is now on its 94th revolution over the earth and at this time in the spacecraft our crew should be finishing their eat period and very shortly will be settling down for a 10-hour sleep period. Here in the Mission Control Center, as our pilot, our flight crew prepares for the nights rest. Our flight controllers prepare their charts and their log books so that they can brief the blue team of flight controller when they come on some hours hence. Also in the Mission Control Center, at this time, is our flight

This is Gemini Control. We are 149 min - hours and 20 minutes into the flight of Gemini 7. Gemini 7 is over the Tananarive Tracking Station about to enter a new day over the Indian Ocean, where the tracking station is now performing network simulations with the Gemini 6 spacecraft, so the data from the tracking station will be sent back by teletype to the Mission Control Center here. The crew is in its 94th revolution and sleeping, and the Gemini 6 spacecraft in its simulated flight, is on its 2nd revolution, 2 hours and 8 minutes into its flight. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are 150 hours and 20 minutes into the flight of Gemini 7 which is just now beginning its 95th revolution around the earth and getting ready to go into darkness. The crew is 1 hour into its sleep period. Meanwhile, in Mission Control Center, the simulated flight of Gemini 6 is going on and we are 3 hours and 8 minutes into that flight, that simulated flight. The Command Pilot and Pilot, Schirra and Stafford, are in the simulator at Cape Kennedy and the network around the world is working on the simulated rendezvous of Gemini 6 with Gemini 7, scheduled no earlier than Sunday. We have a sample of the conversation we hope to hear over Hawaii Sunday, and we'll play that tape for you now.

HAW — Roger, 6, standing by.

S/C 6 — Address 80, 81, 82, all zero.

HAW — Roger. Residual 0. You can set up SEF from now on.

S/C 6 — Propellant remaining at this point indicates 71 percent.

HAW — Roger, 71 percent remaining.

HAW — Gemini 6, Hawaii. I have your height adjust maneuver.

S/C 6 — Ready to copy.

HAW — GET at the burn - 3 03 13. Delta V - 1.3. Duration - 2 seconds. Yaw - 0, Pitch - 0. 25 niner 00 13. 426 and 27 all zeros. Forward thrusters retrograde maneuver.

S/C 6 — Roger. Copy. Height adjust at g.e.t. of 3 plus 03 plus 13. Delta V - 1.3. Duration - 2 seconds. Yaw - 0. Pitch - 0. Core 25 niner 00 13. 26, 27 all zeros. Forward firing thrusters is retrograde maneuver.

HAW — Roger, 6.

S/C 6 — Hawaii, could you explain why we're using forward firing for that burn? It'll cost us almost that much to turn around.

HAW ..... so much. You stay SEF from now on Gemini 6.

S/C 6 Very good, understand.

This is Gemini Control. You have been listening to a taped conversation between the astronauts Schirra and Stafford in the simulator at Cape Kennedy and the Hawaiian Tracking Station simulating their rendezvous mission scheduled for Sunday. That has been a simulation between Gemini 6 and the Hawaiian Tracking Station. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are now 151 hours and 20 minutes into our flight. At this time spacecraft Gemini 7 is passing over the Coastal Sentry tracking ship which is located in the Philippians, off the Philippine Islands in the Pacific. It is on its 95th revolution around the earth. Our flight crew is in a sleep period. We do not yet have confirmation from the ground data that the crew is asleep but we must assume that they are preparing for their sleep. Here in Mission Control we have just concluded the simulated flight of spacecraft Gemini 6. This was a simulated flight. It concluded in the 3rd revolution after an elapsed time of 3 hours and 20 minutes. The spacecraft was simulated through the circularization update. According to Chris Kraft, who simulated the flight director on this flight - on this simulated flight, the programs worked very well. And Chris expressed himself as being very pleased with the way the simulation was carried on. Wally Schirra and Tom Stafford took part in the simulation. They were in the spacecraft simulator at Cape Kennedy throughout this run. This is Gemini Control. We are now 151 hours and 21 minutes into the flight of spacecraft Gemini 7.

END OF TAPE

This is Gemini Control. We are now 152 hours and 20 minutes into our mission. Spacecraft Gemini 7 at the present time, is on its 96th revolution over the earth. And is coming up now on the west coast of Africa. According to the ground data that we have received, our crew is asleep. Here in the Mission Control Center, our White Team of flight controllers are waiting for the arrival in approximately 1 hour of the Blue Team, and they are now going over their reports and they will bring the Blue Team up to date on our flight as it progressed today. Just a minute ago we had a surprise visitor here in the Control Center. It was Santa Claus! He came in, visitors badge and all. Came in to complain. He complained about our spacecraft up there and said he has almost hit them a couple of times, and that we've gotta get them down by Christmas Eve because they are a traffic hazard to him. And, he added that two more Santa Clauses in underwear is too much progress, and he wished the controllers a Merry Christmas and said "I'll wave to your boys as I go by." That was a surprise visit here from Santa Claus and it nonplussed our flight controllers. This is Gemini Control. We are 152 hours 21 minutes into our flight. Spacecraft Gemini 7 approaching the west coast of Africa on its 96th revolution. This is Gemini Control.

END OF TAPE

This is Gemini Control. We are now 153 hours and 20 minutes into the flight of our spacecraft Gemini 7. At the present time, Gemini 7 is on its 96th revolution around the earth. It is passing over the Pacific on its way toward the west coast of South America. At the present time it's just passed over the Canton Island Tracking Station. Our flight surgeon tonight, Dr. Owen Coons, has just reported to us that the physical condition of the crew is A no. 1. Our flight director tells us that all systems on the spacecraft are in a GO condition and here in Mission Control we are in the midst of a shift change. The Blue Team of flight controllers, headed by John Hodge, the Blue Team Flight Director, has appeared on the floor and are currently being briefed on the activities of the spacecraft over the past 9 hours. While the spacecraft was passing over the Rose Knot Tracking Ship, at the beginning of this revolution, we had a voice tape between the Mission Control Center and that Tracking Ship. And that was the moment when Santa Claus walked into the Control Room. And so we will play that tape back which picks up some of Santa's voice.

KRANZ Good thing Fendell is in here. I didn't believe it.

FENDELL You'd better check that . . . . .

KRANZ You ought to see this. I wish we had a camera here. You wouldn't believe it though.

FENDELL Has he got a badge on?

KRANZ Yeah, he's got a badge. ..... visitor is he?

SANTA CLAUS ....your broadcasts are messing up my roofs up there.
By golly, they have got to come down before Christmas Eve.
I nearly ran into them on the way down here.
I don't mind progress - like these guys go around real fast
I know, in 90 minutes they go around what takes me a whole night.
I'm all for progress and these ..... are ok. I know they're coming, but two Santa Clauses in their underwear is too much progress!!

SANTA CLAUS Now, let's be a little more careful from now on men, remember, it's pretty close to Christmas.

KRANZ Hey, Bill, what do you want .....

FENDELL Is that guy for real?

KRANZ That is for real, Bill.

That was a voice tape of some conversation that was ensuing here in the Mission Control Center and we were in contact with Rose Knot, the tracking ship located off the east coast of South America and the voices, of course, one of them was that of our Flight Director, Gene Kranz. He was nonplussed, I guess you could tell it from his voice as he was telling the Rose Knot what was transpiring here. The other voice, of course, was Santa Claus, and we find out now that Santa Claus was Captain Gene Vallerie, Air Force Captain Gene Vallerie, and he is a valid part of this mission for the Air Force and he is an experimenter, he works on the Air Force experiments, and he is off duty and so he put on his Santa Claus suit and brought a little Christmas cheer into this Mission Control Center. At this time we are 153 hours 23 minutes into our mission. Our spacecraft is on its 96th revolution. From the ground data that we received from the spacecraft, the telemetry, it appears that the crew is asleep. This is Gemini Control.

END OF TAPE

This is Mission Control, 155 hours and 20 minutes into the flight of the Gemini 7 mission, now in its 6th day of flight. Just now beginning the 98th revolution around the earth. Since the last report on Gemini 7, we have had reports from the tracking ship, Rose Knot off the east coast of South America, early in the 97th rev where a tape dump of onboard telemetry was performed. Biomed data indicated the crew was asleep at this time. At a ground elapsed time of 154 hours and 36 minutes, Gemini 7 started its pass over the tracking ship, Coastal Sentry off the Philippine Islands. At that time the biomed data indicated that command pilot, Frank Borman, was active momentarily and the pilot James Lovell was quiet, probably asleep. The command communicator on the Coastal Sentry confirmed that the command pilot had been active because he had flipped a couple of switches on the center panel. Gemini 7 is now making another pass over the tracking ship, Rose Knot, as it begins its 98th revolution around the earth. At 155 hours and 21 minutes into the flight of Gemini 7, this is Gemini Control.

END OF TAPE

This is Gemini Control, 156 hours and 20 minutes into the flight of Gemini 7. We are now about half-way through the 7th day of this Gemini 7 mission. We're nearing the end of the 98th revolution around the earth. Just a few minutes ago, Gemini 7 passed over the Tracking Ship Coastal Sentry off the Phillippines and Command Communicator Charles Lewis reported that all systems were GO. Flight Director John Hodge released the flight controller team onboard the Coastal Sentry for the night. Gemini 7 is now over the South Pacific and heading for the west coast of South America, in the beginning of the 99th revolution. The next tracking station to acquire Gemini 7 will be the Canary Tracking Station in about 45 minutes. All is quiet here in the Control Center as the Blue Team nears the beginning of the 4th hour in what has been a relatively quiet shift with the seven crew asleep. At 156 hours and 21 minutes into the flight of Gemini 7, this is Gemini Control.

END OF TAPE

This is Gemini Control. One hundred fifty seven hours and 20 minutes into the mission of Gemini 7. The flight is now on the 99th revolution passing over the Suez Canal in North Africa. Gemini 7 is now in daylight, but will start back into darkness in about 25 minutes. The darkness will last about 45 minutes and then the sun will begin to rise on Gemini 7 again. This cycle is repeated twice each time 7 makes a revolution around the earth. The Canary Tracking Station was the last to acquire Gemini 7. At that station a tape dump of the onboard telemetry was performed. All systems were GO, and the crew was still sleeping. At 157 hours and 20 minutes into the flight of Gemini 7 this is Gemini Control.

END OF TAPE

This is Gemini Control, 158 hours and 20 minutes into the flight of Gemini 7. Gemini 7 is now nearing the end of the 99th revolution and will soon be coming up on the 100th time around the world for astronauts Frank Borman and James Lovell. Gemini 7 will soon be starting its pass over the northern part of South America and will be acquired by the Antigua tracking station in about 9 minutes. The Canary tracking station will have acquisition of Gemini 7 some 20 minutes from now. The crew's sleep period is scheduled to end at 158:15 minutes into the flight, or about 1 hour from now. Excuse me, 159:15 minutes into the flight. The spacecraft is now in the South Pacific right off of the west coast of South America.At 158 hours and 21 minutes into the flight, this is Gemini Control.

END OF TAPE

This is Gemini Control, 159 hours and 20 minutes into the flight of Gemini 7. The Gemini 7 spacecraft is now on its 100th revolution. On the pass over the Canary tracking station about 40 minutes ago, Command Pilot, Frank Borman was up and operating switches. And pilot, James Lovell, was exercising according to biomedical data received by flight surgeon, Dr. Owen Coons. The crew apparently wakened just before acquiring the Canary tracking station. A tape dump was performed by the Canary station and all systems were "go." At the present time Gemini 7 is over the Carnarvon tracking station. The apogee of Gemini 7 is now 162.5 nautical miles and perigee is 161.9 nautical miles. Almost a circular, perfect circular orbit. The flight is now passing across the southern half of the world in the 100th revolution. We have a late report on activities at Cape Kennedy, Pad 19 for the Gemini 6 launch. At the present time crews are installing doors and shingles on the Gemini 6 and the fairing over the horizon scanner on the upper neck of the spacecraft. Prior to the start of the midcount, which is scheduled to get underway at about 8:00 a.m. eastern standard time this morning, the suit circuit leakage test will begin. Everything at Pad 19 is on or ahead of schedule for the Sunday morning launch of Gemini 6. Weather at the cape now is scattered clouds at 5 to 10 thousand feet. With a temperature of 59 degrees and calm seas. The weather forecast is favorable for launch Sunday morning. The ceiling is above 5,000 feet. The elapsed time now is 159 hours and 22 minutes as the Gemini spacecraft 7 makes its pass across northern Australia in its 100th revolution. This is Gemini Control.

END OF TAPE

This is Gemini Control, 159 hours and 35 minutes into the flight of Gemini 7. The Gemini 7 spacecraft now in its 100th revolution and starting its swing across the South Pacific on its way toward a pass across Central America. We have a tape of the conversation between Gemini 7 and the Carnarvon tracking station a few minutes ago. We will play that tape for you now.

S/C Carnarvon, good morning.

CRO Good morning to you. We are going to call a fuel cell purge for you, whenever you are ready.

S/C Roger, stand by please. Send it down.

CRO All right. Looks good flight.

Flight Roger. C-band on?

CRO . . garbled. 1052 Zulu.

Flight Roger. Hot TX.

CRO Garbled . .

Flight Roger.

S/C Hello down there Carnarvon. Looks like a little lightning down there.

CRO Yes, we've got a little storm north of us here.

S/C We went to B pump on the primary loop last night at 154:32:25.

CRO . . garbled . .

S/C When we woke this morning we were tumbling much faster than we ever had before. Cabin wall temperatures, . . garbled . . temperatures were about 20 degrees colder than they have been before. We were chilly.

CRO Roger, copy. Hear that Flight?

Flight Roger. We noticed them using the ACME during the night, just about an hour ago.

CRO Rog. Are we having any venting?

Flight Didn't see any venting at all. How low did he say the cabin wall temp was?

CRO 20 degrees. Okay. I didn't get that. We have had TM LOS.

That was the taped conversation between Gemini 7 and the Carnarvon tracking station. Gemini 7 is now in its 100th revolution and about half way across the South Pacific on its way to a pass across Central America. At 159 hours and 37 minutes into the flight of Gemini 7 this is Gemini Control.

End of tape

This is Gemini Control 160 hours and 20 minutes into the flight of Gemini 7. Gemini 7 is now in the 101st revolution around the earth and it is passing over the Canary Tracking Station about this time and it is on its way toward the pass across North Africa. We have a tape here that was recorded a few minutes back between the Spacecraft Communicator, Charlie Bassett, here in the Mission Control Center and the Gemini 7 spacecraft over the Bermuda Station. We will play that tape for you now.

Cap Com Gemini 7, Houston.

S/C Go ahead, Houston.

Cap Com Good morning. How are you this morning?

S/C Fine, the beef bites are delicious.

Cap Com Very good. How was your night? Gemini 7, how did you rest?

S/C Not too good last night, not as good as the night before.

Cap Com Systems look good down here. How are they up there?

S/C ....

We had a loss of signal there from the Bermuda Station. Gemini 7 is now going right over-across Africa at 160 hours and 21 minutes into the flight. We have a report that we received a few minutes ago from the prime recovery ship, Wasp. The Wasp is on station for revolution 104 of Gemini 7. They are located about 325 statute miles southeast of Bermuda. The weather there is very fine. They expect to have a lovely day they said with a cloud cover of about 2000 feet, visibility of 10 miles, winds northeast at 12 knots and 3 foot swells and 2 foot waves. The outside temperature was a very pleasant 69 degrees F. At 160 hours and 22 minutes into the flight of Gemini 7, this is Gemini Control.

END OF TAPE

This is Gemini Control. 160 hours and 35 minutes into the flight of Gemini 7. Gemini 7 is now over the Arabian Peninsula on its way for a pass over the Indian Ocean. A few minutes ago, the 7 spacecraft passed over the Canary Islands We have a tape of that conversation, which we'll play for you now.

CYI Gemini 7, Canary Cap Com. How do you read?

S/C Read you loud and clear, Canary.

CYI Okay. Would you place your quantity read switch to ECS 02, please. Flight would like a read out on ohms propellant quantity.

S/C Roger. 37% on the OAMS.

CYI Roger. Check quantity and pressure on the ECS 02.

S/C Roger. Quantity is about 78%, pressure is 690.

CYI Roger. I copy 78.

S/C Roger.

CYI Okay. Quantity read switch to fuel cell 02.

S/C We read 50%, 660.

CYI Copy.

S/C Pardon me, that's 760.

CYI 760.

S/C Fuel cell H2 is 32% and 450.

CYI Hold it just a minute. Change quantity read switch to off, please.

S/C Roger.

CYI Okay. We'd like the fuel cell 02 heater switched to off, please.

S/C It's off.

CYI Okay.

HOUSTON Tell him...

S/C Canary, we've got something for the systems people to work on.

CYI Say again.

S/C I say we've got something for the systems people to work on.

CYI Okay. Go ahead. Ready to copy.

S/C We woke up.....We were cold most of the night. When we woke up this morning, we were tumbling much more rapidly than we ever have been before. And the cabin temperatures were 20 degrees lower than they've been running. The windows were steamed up, and the....it was very cold in here. The suit inlet temperature showed it was about the same. Right now, we're running the highest suit inlet temperature we've ever seen, 68%. It's a little warm, and we're just comfortable.

CYI Roger.

S/C All I want to know is why.

HOUSTON Canary Cap Com....

CYI ...(Garble)...

HOUSTON Canary Cap Com..

CYI Stand by Houston. Go ahead Houston.

HOUSTON We've been thinking about this.

CYI Say again, Flight.

HOUSTON We've been thinking about this. We believe that what's happened is that the condensate has filled up the water tank and is now boiling out.

S/C ...the people on the Blue Team ought to be able to figure that one out.

CYI Okay. Stand by. I'm trying to get an answer.

HOUSTON Canary. This is Houston Flight.

CYI Say that again, Flight.

HOUSTON We believe that the water boiler is reaching a filled point from the suit condensate and is now boiling out, giving you a tumble rate.

CYI Water boil.....being effect....

HOUSTON Water boil is reaching a filled point as a result of the suit condensate and is now boiling off.

CYI Alright. I copy. Then, the Blue Team says...

HOUSTON You didn't have to put it that way.

CYI ...water boiling has reached a filled point and is boiling out now. Probably the trouble.

S/C I see.

HOUSTON Canary Cap Com, Houston Flight.

CYI Go ahead flight.

HOUSTON I wonder if you can get an estimate of tumbling rate from them.

CYI Okay. Gemini, Canary.

S/C Go ahead, Canary.

CYI Can you give me an estimate on your tumble rate, or was it terminated this morning when you woke up?

S/C Yea. We stopped it right away. We were tumbling about 10 degrees per second.

CYI Roger.

HOUSTON We copy.

S/C .....fuel cells... We are very very much greater than anything received to date.

CYI Roger. Copy. Okay. We have something else for you. The reason we had you turn that O2 heater switch to off is we want to get a few data points on that pressure decay while the heater is off.

S/C Okay.

CYI Roge. We'll be standing by.

S/C See you later on today.

CYI Roger.

That conversation was with the Gemini 7 crew over the Canary Island tracking station. Gemini 7 now is beginning to make its pass over the Indian Ocean on its way down towards Carnarvon Australia. It's now in its 101 revolution around the earth at 160 hours and 39 minutes into the mission of Gemini 7. This is Gemini Control.

END OF TAPE

This is Gemini Control 161 hours and 20 minutes into the flight of Gemini 7. Gemini 7 is now over the South Pacific on its 101st revolution around the earth. The Red Team Members are now coming into the Control Room here and being briefed by the Blue Team of Flight Controllers before they take over for the day shift. Flight Director, John Hodge, has a large gold key about 18 inches long on his console which he plans to hand over to Flight Director Chris Kraft at the shift change. Apparently this symbol of authority is going to be a part of the shift change from one Flight Director to the next at the end of each shift. On the last pass over the Carnarvon Australia tracking station, the flight plan update was given the crew by the Command Communicator Keith Kundel at the Carnarvon Station. We have that tape and we will play it for you now.

Carnarvon — Gemini 7, Carnarvon.

S/C — Gemini 7, go ahead.

Carnarvon — Okay Gemini 7. You are looking good here on the ground. I have a flight plan update whenever you are ready to copy.

S/C — Roger, standby one. Go whenever you are ready, Carnarvon.

Carnarvon — All right, the tital is a node, time 161 29 23, rev 101, latitude 117.3 degrees left, right Ascension 10 hours 32 minutes 55 seconds. Second item is flight plan time line update, change 160 00 00 to 160 17 00. Next item, time 161 37 11, crew status report Command Pilot at Canaveral. The next item has been deleted. It is an MSC-12 at time 161 55 13, that has been deleted due to clouds.

S/C — Roger.

Flight — You didn't have to give him that, Stu.

Carnarvon — Next item is Apollo, time 162 09 21, sequence number 137, mode 01, pitch 30 degrees down, yaw 7 degrees left. Do you copy.

S/C I copy Carnarvon.

Carnarvon Time 162 27 19, crew status report Pilot and PLA update at Carnarvon. MSC-12, 162 4[illegible], sequence 14, time 163 08 25, go--no-go at Texas. Time 16[illegible] 00, purge fuel cells at Bermuda. MSC-1[illegible], 163 30 [illegible]8, sequence 06, pitch 30 degrees down, yaw 0 degrees. D-4/D-7, 164 03 14, sequence numbers 415 and 416, mode 0?. Apollo 165 08 30, sequence number 94, mode number 03, pitch 30 degrees down, yaw 19 degrees right. Time 165 20 00, exercise period. Time 165 30 00 eat period. Time 166 50 00, cabin temperature survey. Time 167 14 43 purge fuel cells at Carnarvon. That completes the flight plan update if you copy, any questions?

S/C Roger, I copy.

Carnarvon Roger. You are still go here. You look real good.

S/C Roger, thank you.

Flight Transmit in the main, Carnarvon.

Carnarvon Confirm, Flight.

Carnarvon Gemini 7, Carnarvon.

S/C Go ahead Carnarvon.

Carnarvon Did the Command Pilot -- did he disconnect the -- there was no bio-med TM for the first 30 seconds.

S/C Right, we were removing the orbital flight suit here and he was disconnected.

Carnarvon Roger, I understand. Did you receive your main yet, Flight.

Flight Negative. You better send another.

Carnarvon Roger, it's on the way.

That conversation was with Gemini 7 over the Carnarvon tracking station. Borman was taking off his orbital flight suit, that is the light-weight suit worn by the 7 crew over their long underwear when not in the pressure suit. At 161 hours and 27 minutes into the flight of Gemini 7 with the Gemini spacecraft in the 101st orbit coming up on Central America, this is Gemini Control.

END OF TAPE

Gemini Control Houston here at 161 hours, 49 minutes into the flight. It must have been a fairly different night for the crew. One of the things, they noticed about a 20 degree temperature drop at some point during the night, they just advised us. Frank Borman had taken off his spacesuit last night, put on and was wearing, his underwear. He put on, not one but two, of the orbital flight suits. Lovell reports this morning, the crew also noticed some random drift which is not completely explained yet. Perhaps it's the water boiler venting some water. The tape from the swing across Antigua and Grand Turk Island goes like this.

HOUSTON Gemini 7, Houston.

S/C This is 7. Go ahead, Houston.

HOUSTON Hello, Houston, Gemini 7. We note your oral temperature, and please await for mark to start your blood pressure.

S/C Roger. Understand you have oral temperature.

HOUSTON That's affirm, but please await the blood pressure. Listen on this next pass over the Dakar area, would you check the weather?

S/C Roger. Will do. I have a question for you, Sir.

HOUSTON Roger.

S/C You gave us D-12, with a sequence 14?

HOUSTON Roger. We have a flight plan update with regard to that. We'd like to make it after the medical data pass. .....is full scale.

S/C Roger. We'll stand by.

HOUSTON Okay. Roger, Gemini 7. You can start your blood pressure. I'll turn you over to the flight surgeons.

CAPE Cape has acquisition.

HOUSTON Gemini 7, we have a good blood pressure. Standing by for your exercise.

S/C Starting with the exercise. Pressure 79.

HOUSTON Roger. We copy. Cuff is full scale. Right. Gemini 7. We have a good blood pressure. Standing by for your food report.

S/C Roger. Stand by. Last night we had Day 5, Meal C. This morning, Day 6, Meal 8. Lovell didn't eat the peanut tubes. Borman didn't eat the peanut tubes or the beef bites. The pilot had 461 ounces of water; the command pilot's had 436 ounces of water.

HOUSTON Roger. Copy. We want a report also on...Standing by for your sleep report.

ANTIGUA LOS, Antigua.

S/C I'll estimate we had about 5 or 6 hours sleep last night. Not too good.

HOUSTON That the same for both crewmen?

S/C Roger.

HOUSTON Roger. Would you give us the total count on your water gun now?

S/C Total count on the water gun right now is 2591.

HOUSTON Roger. Thank you. Now that the suit is off, we'd like to try to repair the respiratory trace on the command pilot. We believe that the connector on the output, or lower portion, of the signal conditioner has come loose. And, it's the second signal conditioner from the left. We'd like the command pilot to have a look, see if it's loose, and attempt to tighten it some.

S/C Roger. Your friendly inside maintenance. We'll get to work right away.

HOUSTON Roger. In the meantime, would you say that the tumbling had anything to do with your lack of sleep?

S/C No. We didn't even know we were tumbling until we woke up.

HOUSTON Roger. Understand.

S/C We had a ... quite a drop in temperature in the cabin last night - about 20 degrees.

HOUSTON Roger. We copied your rising suit inlet temperatures. I gather from a transmission over Carnarvon that the command pilot donned his orbital flight suit. Did he do that before the sleep period started, or during?

S/C He did that during. He did not only don one, he donned both orbital flight suits.

HOUSTON At what elapsed time. Gemini 7, Houston. At what time did the command pilot don the orbital flight suits?

S/C About 1:55 elapsed.

STON Roger. Copy 155. We request that you have the pilot report over Carnarvon whether he took Actifed yesterday or not, and if so, the results. We would also like to ask whether the pilot can get at the sternal lead sensors easily or not. Over.

S/C He did not take the Actifed, and his nose is better. He's been using some skin cream in his nose. What do you want him to do to the lead?

HOUSTON Ask him if he can get at the sternal sensors easily. We've seen a decrement in the sternal EKG since doning the G5C suit. We'd like to know how hard it's going to be for him to get at those two sensors.

S/C He can reach down there and push on them. Is that what you want him to do?

HOUSTON Roger. Let's have a go at that.

S/C Okay. I can't find anything wrong with the rates of this amplifier.

HOUSTON Roger. Understand. We're still receiving a poor trace. Leave it with us for a little while.

S/C Roger. By the way, what is this amplifier to?

HOUSTON The respiratory trace or the impedance pneumogram. It's the second one from the left in the garment, and we think that it's the lower connector.

S/C It's on tight.

HOUSTON Roger. Would you advise what position your suit control valves were in during the night.

S/C Roger. They were almost all the way closed.

HOUSTON Roger. Copy closed. Surgeon over to the Cap Com. Gemini 7, Cap Com. I have a flight plan update for you.

S/C Go ahead Com.

HOUSTON MSC 12, time 162:45:00. Sequence 14, delete. MSC 12, time 164:14:00. Sequence 14, substitution for the above deletion. And, again, we'd like to check the weather in the Dakar area on this pass. The specific area just north of the beach. We'd also like to know the major component of this drift you experienced during the night.

S/C We can't tell you that, Charlie. It was a random drift.

HOUSTON It was random.

S/C We tightened up completely. We play like it's our night time. And, when we opened up, we found out we were going round and round.

HOUSTON I see. What control inputs did you use to stop the drift?

S/C Pulse.

HOUSTON You used pulse? Note that this drift rate is still building on you?

S/C No. It's fine now. Just like it was before.

HOUSTON Okay. You're not inducing any drifts now at all?

S/C No. Oh, we're drifting, but not that rapidly.

HOUSTON I see. Thank you very much.

BERMUDA Bermuda remote.

END OF TAPE

Gemini Control Houston here at 162 hours and 7 minutes into the flight. An additional discussion over Canarys regarding that tumbling that was noted when the boys woke up this morning. Our suspicion, and it is still only a suspicion, is that it is being caused by the condensate water which comes out of our suit circuits onboard. The condensate a drop at a time collects in the water boiler and when sufficient pressure and water buildup in the water boiler area it vents. We first noted this on the Grissom-Young GT-3 flight and at that time were puzzled as to what was causing the drift. It is completely explainable if this water-boiler venting mode, however, as I say, we are not exactly sure that this is the case. We started playing some music for the crew this morning. The first tune going up was Louis Armstrong's very throaty rendition of "Hey, Look Me Over" and we want to play for you now the conversation that ensued between 7 and Elliot See remoting through Canarys and then Kano.

S/C	Canarys, Gemini 7.
Canary	Gemini 7, Canary Cap Com.
S/C	Roger, we are starting to pick up a slight drop in 2C again but with a slight imbalance of the two .... (garbled)
Canary	Roger, copy.
Cap Com	We noticed that down here. We may have to go open on that 2C but not right now.
S/C	Okay, we just wanted to let you all on the ground know we see it.
Cap Com	Roger.
S/C	I think the Blue Team is getting sleepy.

Cap Com — We are about ready to go home.

S/C — Yeah. Canary, 7.

Canary — Go ahead.

S/C — Most of the coast of Africa from our present point - up and down the coast the sky is clear, there are some Stratus right above us, or right below us I should say.

Canary — Roger 7, We copy.

S/C — .... (Garbled) report.

Canary — Very good job.

Flight — Yeah.

S/C — It looks like it might rain if the sun doesn't shine.

Canary — You guys are in good jolly spirits this morning.

S/C — I don't know why.

AFD — Canary, AFD.

Canary — Go ahead AFD.

AFD — Okay, can you hear us now.

Canary — Rog, we can hear you. We are noticing about a 1.2 amp difference in the main bus, it dropped from about 3.37 to 3.18 in about 14 minutes. That is on 2C.

AFD — Canary Cap Com, AFD.

Canary — Go ahead.

AFD — Do you hear the Flight Director.

Canary — Say again.

AFD — Have you been reading the Flight Director.

Canary — No I haven't, not at all.

AFD — Okay.

Canary — I tried to get a hold of him one time, got no response.

AFD — Do you hear the Flight Director then, Canarys.

Canary — Right now.

AFD Yes.

Canary Negative.

Goddard Voice That is negative at Goddard voice also.

AFD How about it now.

Canary You are loud and clear, Flight.

Flight Rog. Can you give me those amperage readings again, please.

Canary Roger, 3.37 down to 3.18 in 14 minutes and that is on 2C and a 1.2 amp differential between the two main currents.

Flight 3.18 on 2C? Is that what you said?

Canary Roger. It dropped from 3.37 down to 3.18 in 14 minutes. Stack 2B remains constant and we are getting a 1.2 amp differential between the two main currents.

We have had LOS.

Flight Roger. I copy. That was a problem at my console here Canaries, that you couldn't read me.

Canary Roger.

HOU contact Kano, Houston.

Kano contact, Houston contact.

Kano contact Kano, go ahead.

HOU contact Go remote, UHF please.

Kano contact Roger, Kano remote.

Cap Com Gemini 7, Gemini 7. Houston Cap Com, over. Do you read.

S/C Loud and clear.

Cap Com Roger. Have you got a minute to talk to me or are you tied up for this Apollo landmark.

S/C Go ahead, we can try. Jim can talk.

Cap Com Roger, we have got a whistle on the line here, I'm not sure I can hear you too well. We would like to get an assessment from you regarding this tumbling to try to establish definitely whether or not it might have been due to the water boiler venting. Are you able to tell at all, or were you able to tell at all what axis the tumbling initiated from.

S/C We are not sure but we feel that it was sort of a left yaw from our present roll motion.

Cap Com Roger. As I understand it you just found this upon waking up and you took it out at that time and it has not started again. Is that correct?

S/C We haven't noticed it. This might build up for a long time. Remember that we closed up for the night and had our rates build up but since we took it out we haven't noticed any appreciable buildup on it, so right now we are go.

Cap Com Roger. We have a very bad background noise here. I understand your comments. We would be interested in your t[illegible] thinking about it further and let us know if you have any additional thoughts on it.

S/C Roger, Elliot.

Cap Com Gemini 7 Houston. Your HF is up if you are interested.

S/C Thank you.

This is Gemini Control Houston again. That conversation, of course, shedding considerable additional light on the venting matter. We expect additional discussion on that point over Carnarvon. The temperature drop which was experienced last night also has evoked some theories. We think it is very likely that it was due to the sun angle that was hitting certain

areas of the spacecraft, for instance, the adapter area or perhaps the nose instead of the angles which the sun has been looking at the spacecraft through the last 6 to 7 days that might have changed the overall temperature balance onboard. This would have been produced, of course, by the tumbling effect and could at least in theory account for a drop in temperature. In any case, the attitudes have been showing up and we are flying level and true this morning. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, Houston. 162 hours, 54 minutes into the flight. Over Carnarvon a few minutes ago, more discussion regarding the water boiler or the yaw effect noticed overnight which set up some tumbling rates. In the conversation, Jim Lovell speculates that he thinks it was a yaw left component which would agree with our theory about the water boiler collecting suit condensate moisture, building up pressure, and venting slightly. The venting was so insignificant that it didn't wake the crew up. When they awoke this morning, they did notice some tumbling. Here's the tape from over Carnarvon.

CRO Gemini 7, Carnarvon.

S/C This is 7. Over.

CRO Roger. We're ready for the crew status report on the pilot. We haven't received a temperature on the pilot yet. We'll tell you that when we have it.

S/C Righto.

CRO Have C-Band track, Flight.

HOUSTON Roger.

CRO Gemini 7, Carnarvon.

S/C Go ahead.

CRO While we're waiting on the temperature request, can you copy a flight update?

S/C Roger.

CRO Okay. This is area 104-1, 164:27:03.

HOUSTON Carnarvon. Systems, Houston Flight.

CRO Houston Flight. This is Carnarvon systems.

HOUSTON When you get a chance in this task, we'd like to know what the wearing apparel condition is of the command pilot.

CRO Roger. Wearing apparel condition of the pilot.

HOUSTON Command pilot.

CRO Right. Area 107-4, 170:30:56. Area 108-3, 171:47:37. Area 109-3, 173:23:17. Area 110-3, 174:58:54. RAP of 400 feet, 21 plus 50 for all areas. Did you copy?

S/C Roger. Thank you.

CRO Roger.

S/C You got the temperature yet, Carnarvon?

CRO Right. We have your temperature. I'll turn you over to our Surgeon. Gemini 7, this is Carnarvon Surgeon. We're ready for your blood pressure.

S/C Blood pressure coming up.

CRO Your cuff is full scale. Gemini 7, pilot, your cuff is not .... down.

S/C There we go.

CRO Roger. Gemini 7, we have a valid blood pressure. Give us a mark before you start your exercise.

S/C Mark.

CRO Blood pressure's going down. Pressure up. Back down. Flight, Carnarvon.

HOUSTON Go ahead.

CRO Are you getting our mains?

HOUSTON That's affirmative.

CRO We have the readings on the main bus path, if you're interested.

HOUSTON Go ahead.

CRO Okay. PHO 1, 8.70. PHO 2, main bus, 7.49. We have stack current. DEO 1, that's stack 2A, 2.44. DEO 2, stack 2B, 2.12. Stack 2C, 2.93.

HOUSTON Roger.

CRO Gemini 7, Carnarvon. You're still looking good here on the ground. We'll be standing by in case you need us.

S/C Roger. We're noticing that 2C is slowly, slowly decaying. Do you agree with this.

HOUSTON Yea, but he turned off that Primary A.

CRO Repeat that.

HOUSTON He turned off Primary A pump and both cells have been going down. Tell him we're keeping an eye on it.

CRO Roger. We're keeping an eye on it, Gemini 7. We have been seeing it going down; but you have turned off your Primary A pump.

S/C Roger. That's affirmed.

HOUSTON Ask the command pilot what his present status is. Does he have the flight suit on or off.

CRO Got that Flight. While I was talking to you. The Surgeon has that.

HOUSTON If he does, I didn't hear it.

CRO Roger. He's in his underwear, Flight.

HOUSTON Roge.

CRO His words were he was reposing majestically.

HOUSTON And, with those kind of words, the Flight Director thinks he's becoming philosophical since he's been up there.

CRO Gemini 7, Carnarvon.

S/C Go ahead, Carnarvon.

CRO The Flight Director says that you're becoming philosophical with those kind of words.

S/C Carnarvon, tell the Flight Director, thank you.

CTN Canton's had LOS.

HOUSTON Roger LOS.

END OF TAPE

This is Gemini Control Houston. 163 hours, 6 minutes into the flight of Gemini 7. Over the States, this pass, 7 crew will be given a "go" for a 119 revolution flight. They're also to perform a fuel cell purge at the eastern end of the pass; and out over Canaries, as they come up on the Canary Islands, on this next rev, they're to perform some Apollo landmark contrasts photography. The weather story this morning goes like this: the weather group here promises satisfactory weather for another 48 hours regarding 7; in the mid-Pacific, our landing area there centered 800 miles east, northeast of Honolulu, the weatherman predicts cloudy skies today with scattered showers, winds east 15 to 20 knots, seas running about 6 feet; in the Western Pacific, 700 miles south, to southwest of Tokyo, skies partly cloudy, winds east 10 knots, sea is about 3 feet; in the Eastern Atlantic, 500 miles of Cape Verde Islands, skies partly cloudy, winds easterly at about 10 knots seas running 4 to 5 feet; in the primary landing zone, in the Western Atlantic area, 800 miles east of Miami, winds northeast at 15 knots, seas 3 to 4 feet. Weather conditions for the planned launch of Gemini 6 are expected to be satisfactory for launch and orbital operations during the entire flight. The forecast for the Cape Kennedy area calls for partly cloudy skies with ceilings above 5000 feet. Surface winds will be southeast at 10 knot Seas in the offshore area will be 2 to 3 feet. Launch time temperatures will be about 67 degrees. And, out across the Atlantic, in the key abort landing areas, set up for any launch, let's see. The Atlantic, no unusual weather at all in the Atlantic. It looks fairly calm all the way across. Seas again in the immediate launch area are running about 2 to 3 feet. Guaymas, while we've been talking in the last minute, has established contact and they're looking at the TM on the ground there. Let's stand by and try to pick up some conversation. Flight Director and the E-Com man, Electrical, Environmental, and Communications, taking a close look at the performance of that section 2 fuel cell, which today is acting a little bit like it did yesterday morning. Voltage falling a bit in stack 2, stack C - Charlie, in section 2, I believe. We're at 102

revolutions of flight, we're only five minutes away from the 103. A little more than an hour and a half from now, we should hit the exact mid-point of this flight. Our elapsed time clock over in the far right of the room now reads 166 hours, 13 minutes remaining; and our ground elapsed clock shows 163 hours. I think Elliot See is just about ready to put in a call to 7, and I think if we do cut in now, we can pick it up.

S/C This is Gemini 7.

HOUSTON Roger. Be advised you're "go" for 119-1.

S/C Thank you, Elliot.

HOUSTON Roger. You know you're all down hill from this one on.

S/C Yea. That's what we just figured out.

HOUSTON Roger. How about a read back on all your quantities?

S/C Roger. Fuel ...The only thing we have in the abnormalities in the fuel cell 2C. The main batteries are all okay. 23 volts. Fuel cell stack read outs: 1A, 3.0: 1B, 3.5; 1C, 3.0; 2A, 2.5; 2B, 2.5; 2C, 3.5. That has now decreased to 3 on 2C. Main bus voltage 27. RCS A, 2900. Temperature 75 degrees. RCS b, 3000. Temperature's up to 90 degrees on that one. Left hand, secondary 02, 5400. Right hand, secondary 02, 5300.

HOUSTON Roger. Sounds real good. Be advised, the OAMS cutoff for today is 23%. You'll not get to that under normal usage, but it's just one to save the proper amount. You're really being an old miser there with that fuel.

S/C Roger. For the people who are concerned about the water boiler, or wonder about it, we are definitely venting out the left side here. We can see it now; quite a good amount.

HOUSTON Good. That confirms what we were thinking down here; and we've got some further thoughts for you on that later on.

S/C Roger. We've had a little difficulty determining which way we're rolling. We stayed buttoned up in here and then we awakened and had a very random observation. I guess we yaw left, though.

HOUSTON Understand. You were yawing left. We looked at your control inputs, and they appeared to be mostly yaw right to take it out with some pitch.

S/C Righto.

HOUSTON Do you want to go ahead with the fuel cell purge?

S/C Stand by. Here it comes. Here's Jim with it. Got the fuel cell purge coming now.

HOUSTON Roger. Stand by for a TR, Gemini 7.

S/C Standing by. TR received. For your information, we were not able to accomplish Apollo landmark 137. Clouds over the lake.

HOUSTON Roge. Understand.

S/C And, another thing I was wondering about. We're wondering why the RCS heater's on all the time. Is that what they wanted?

HOUSTON That's affirmative.

S/C Okay. Fine and dandy.

HOUSTON That's a spot in the flight plan; starting down hill from there, isn't it?

S/C It is in this one.

HOUSTON You betchya! You'll are really doing a great job.

S/C I'll tell you. The best decision made was when Mr. Kraft ordered me to get out of that suit.

HOUSTON We thought it would be. You just made his whole day.

S/C Well, listen. He made my whole night and day. Lovell's without comments.

HOUSTON We had some interesting exchanges of bets in here when you put both flight suits on. Gemini 7, Houston Flight. Jim how about telling us how it is back in the suit.

S/C ...UHF 6 pass....?

**NOTE: At this time, they switched channels and the spacecraft's transmission was not recorded.

HOUSTON Negative. Give me a little more verbal description.

The communicator during this pass is not Elliot See as we advised; it is Ed White, who is the command pilot in the backup crew. Ed has been at the console frequently during this Red Team Shift; and unexpectedly came up and did... is doing the talking during this pass. We're ready to go back to the spacecraft now; we'll pick up some additional conversation.

S/C Can I open Circuit 2C again?

HOUSTON I think we want to wait a while there on that, Frank, until we establish this trend again.

S/C Roger.

HOUSTON Understand your report at this point was 3.5 amps. Is that correct?

S/C We prepared that report about 10 minutes ago, and it is now down to about 3 amps in the cockpit; but it's difficult to tell because you're always doing tape dumps and so on. It's right around between 3 and 3.5.

HOUSTON Roger. Frank, what we're considering there is open circuiting the whole cell.

S/C Roger.

ANTIGUA Acquisition, Antigua.

S/C Is everything still good at the Cape?

HOUSTON Roger. Looking real good. Yea, they're still ahead of schedule, there; and we're going to support their pad test here in about 2 hours.

S/C Roger. Purge complete, Houston.

HOUSTON Roger. Stand by for Surgeon. Gemini 7. This is Surgeon. Could you give me a little bit of a description about what you think your general condition is this morning, in particular as to how you think you as far as the rest status and fatigue. We're interested in this particularly because we're trying to plan something for tonight so that we've got you in shape for this rendezvous which is going to go into your sleep period tomorrow night.

S/C Houston, I think we're in pretty good shape. We are a little sleepy at times, but it's difficult to sleep that full 10 hours. We do cat-nap frequently during the day, though.

HOUSTON You are getting some good cat-naps in then?

S/C Right.

HOUSTON Very good. Was there any moisture in the spacecraft, that you could tell, last night when you got this temp down so low?

S/C Both windows were not frosted, but fogged over.

HOUSTON Do you think that had anything to do with helping to clear this nasal business? You certainly seem to sound better this morning.

S/C I think that little water did help a lot. As a matter of fact, I've been moistening towels in here and putting them over my nose and rubbing my face with them. So has Jim.

HOUSTON Very good. Jim, we've pretty well lost that sternal lead on you. Have you tried pressing the sensors, both the top and the bottom, of the sternum there?

S/C Roger. I'll try it again.

HOUSTON Okay.

S/C Any luck, Surgeon?

HOUSTON Negative, Jim. That doesn't seem to help it very much. I think we're not going to be able to do very much with it until we can get you out of that business to look at it. So, we'll just ride it along here. We've got one good lead on you, though, and we've got good respiratory trace. Frank, we've got two good leads. His respiration trace still is not very good, and that fix that we tried didn't seem to work. So, you might just check yours, Frank and make sure that everything is good there. It can't be the sensors on you, because your Axillary lead is very good.

S/C Roger. Both sensors are tight. And the amplifier is tight also.

HOUSTON Very good. Well, I'd just leave it alone then.

S/C Roge.

HOUSTON Gemini 7. This is Surgeon. We're thinking of just slipping this sleep period an hour tonight. Have you start an hour later and have it go a couple of hours longer tomorrow morning. And, have you try and fit into the program that way so that you'd be ready to go a little bit later tomorrow night. Does that sound agreeable to you?

S/C Roger. That's fine with us.

HOUSTON Very good. Gemini 7, Houston.

S/C Go ahead.

HOUSTON How have you come on the dim light work?

S/C We've taken a couple of pictures of the air glow. We had a good shot of the Arora yesterday, but by the time we got around again, it was gone.

HOUSTON Yes, I think you'll find the only target of opportunity is when they're up.

S/C Roger. ...(Garble)...but we didn't have the fuel to use it.

HOUSTON Right. If we see anything down here that is particularly.... we feel would be particularly worthwhile for you, we'll give you an update on it.

S/C Thank you. Hey, listen. Jim and I are ... We really appreciate all the effort of everybody there. It's really been great. Everybody on the ground's been really helping out; and I wish you'd tell them that.

HOUSTON Well, listen. Our efforts are all up there. You're making it as smooth as silk for us.

GRAND TURK LOS Grand Turk.

Gemini Control here. That probably wraps up the communications for this pass. The spacecraft is now out over the mid-Atlantic. You heard Jim Lovell ask regarding the UHF mode. The reference was to one of several antenna orientation patterns available, during any given pass. Bermuda has been advised to go remote; but the Cap Coms here, Ed White and Elliot See, look like they've exhausted the conversational traffic for this pass, so we'll cut off at this time.

END OF TAPE

Gemini Control Houston here, 163 hours 40 minutes into the flight. Over the Canary Station we had conversation, a brief one, and it went like this.

Canary — Gemini 7, Canary Cap Com com check, how do you read?

S/C — Loud and clear Canary.

Canary — Okay, we have nothing else for you except we would like a humidity readout within the next pass and you can relay it over the next State side contact.

S/C — Thank you.

Canary — Okay, we will be standing by.

S/C — Canary, Gemini 7.

Canary — Go ahead 7.

S/C — We have attempted MSC-12, the land-water interface looked good, a few clouds, however, there was no color change on the reticle again.

Canary — Okay, we copy.

S/C — .... (garbled)

Canary — Say again, you are --

S/C — The color with the filter on I guess a sort of tan-pinkish area such as the desert part of Africa here. Would you relay that to Houston, please.

Canary — Okay, will do.

S/C — Would you also tell them please that we believe this photometer is defective.

Canary — Okay.

Flight — Tell him Flight rogers that.

Canary — Flight rogers that. Canary has telemetry LOS.

Flight Roger Canary.

Canary All system were go at LOS.

Gemini Control here. That concludes the Kano situation -- that concludes the Canary situation. We had additional conversation a very few minutes later while over Kano and toward the tag end of that pass 7 called us to tell us the situation in the Stack C, cell 2. That it was dropping somewhat and we have just about concluded -- do the same test we did yesterday, in other words, open that circuit and see if that won't build the voltage and build the electricity producing conditions within that stack. A little later in the pass, just before the spacecraft reaches Carnarvon we have plans for another D-4/D-7 experiment taking radiometric measurements and we now have the conversation remoted through Kano for you.

Kano Kano remote.

Cap Com Gemini 7, Gemini 7. Houston. Do you read.

S/C Loud and clear Houston. Go ahead, please.

Cap Com We want you to delete the next MSC-12 activity for the time being. We want to look at the data on the next tape dump from this one that you just did. We would like you to put the instrument up without changing the calibration setting.

S/C Roger. The calibration setting was set at the full up position since it never changed colors. Jim just left it full up so we have a very ready source of it right away.

Cap Com Roger.

S/C This is Gemini 7.

Cap Com Roger 7, go ahead. Gemini 7, go ahead.

S/C Our fuel cell 2C stack is now down to 2 amps and we are getting a 2 amp split in the main bus amps.

Cap Com Roger. We will probably give it an open circuit at Carnarvon this time, 7.

S/C Roger, thank you.

Cap Com We will be in touch with you at Tananarive also if necessary.

S/C Roger.

END OF TAPE

Gemini Control here. We talked to 7 over Tananarive and the conversation went like this.

TAN Tananarive remote. Tananarive has acquisition.

HOUSTON Gemini 7, Houston. Do you read?

S/C Loud and clear, Houston. Go ahead.

HOUSTON Roger. You're also loud and clear. Could you give us a reading on Stack 2C again, please.

S/C Elliot, we have about 2 amps on 2C.

HOUSTON Roger. Understand you're still maintaining 2 amps.

S/C Roger. And the voltage is 28 volts.

HOUSTON That's less voltage 28 volts?

S/C That's stack voltage. 2C stack voltage is 28 volts.

HOUSTON Roger. Is that the bus voltage or did you open circuit?

S/C No. That's the bus voltage. No open circuit.

HOUSTON Roger. Gemini 7, Houston. Gemini 7, Houston. Do you read?

S/C Gemini 7. Roger.

HOUSTON Our present plans are to turn off that section at Canton with the power switch, and let it reopen circuit from there to the U.S. And, then we'll turn it back on and observe how it reacts with that.

S/C Understand you plan on turning off the second section to open circuit it with the power switch at Canton and leaving it on until we get to the States. Is that correct?

HOUSTON Roger.

S/C ...(Garble)...

END OF TAPE

This is Gemini Control Houston. We're on the 103rd revolution and very close to the 2½ million mile mark in the flight. The time to end of flight and the elapsed time are now roughly 40 minutes apart. The clocks are almost balanced. Over Carnarvon we had this conversation.

CRO Carnarvon here, TM solid, everything looks good.

HOU FLIGHT Roger Carnarvon.

CRO They're not showing any modulation on the experimental transmitter. Looks like he still has the beacon on and he has not started the D-4/D-7 experiment, he's probably concerned about that fuel cell. Should I ask him to start that thing or not?

HOU FLIGHT You might query him about it. You say he still has the acq aid on?

CRO Rog, that's what it looks like from here.

HOU FLIGHT Okay, you might remind him about the acq aid on.

CRO Gemini 7, Carnarvon Cap Com.

S/C Go ahead Carnarvon.

CRO Roger, we're receiving acq aid beacon and we're expecting D-4/D-7, is there any trouble?

S/C No, we don't have the schedule yet Carnarvon. Stand by we're checking our log now.

CRO Roger.

S/C We thought it was later. We thought it was 30 to 03.

CRO All righty. Gemini 7, Carnarvon, we have a readout for you this pass and you look good here on the ground. We're standing by.

S/C Roger, did you schedule that for the next pass, that's our fault.

CRO That's all right. That's no sweat, Texas will take care of it.

S/C Thank you.

HOU FLIGHT Would you have him give us a readout on 2C?

CRO Gemini 7, Carnarvon, would you give us another readout on 2C?

S/C Roger stand by. That will be about 2½ amps as close as we can read it.

CRO Roger, thank you.

HOU FLIGHT That makes us feel better. Tell him that agrees with what we see on the ground. His last reading did not.

CRO Flight tells us that makes us feel better. It agrees with the groundrange quite closely.

S/C Roger

CRO On 2.39 here at Carnarvon.

HOU FLIGHT Rog, that agrees fairly close to his.

CRO All righty

HOU FLIGHT Trans factor there right?

CRO That's affirm.

S/C There we go again with the RCS range indication of thruster firing but we also saw a brief indication of a retrorocket firing while we had solid lock. Apparently there's a little bit of noise riding on that TM.

CRO Roger.

HOU FLIGHT .....event type noise here at MCC without getting a TM droupout.

CRO Roger

S/C We still have C band type but we're about 10 seconds past our nominal LOS, there we lost it. It went out at about +12 seconds.

END OF TAPE

This is Gemini Control Houston. Over Canton Island only minutes ago we had this conversation.

Cap Com — Gemini 7, Houston.

S/C — This is 7, go ahead.

Cap Com — I would like for you to get ready for turning off section 2 power switch Jim. Could you give us a complete readout on your stack currents at the present time.

S/C — Say again..

Cap Com — We would like a complete readout on your stack currents.

S/C — This is Gemini 7, you are unreadable. Say again please.

Cap Com — Would you give us a complete readout on your stack currents?

S/C — Understand Houston. You want a complete readout on our stack currents. Standby and I'll give them to you.

Cap Com — Roger.

S/C — 1A, 3.5; 1B, 4; 1C, 3.5; 2A, 3; 2B, 2½; 2C 2½.

Cap Com — Roger Gemini 7. What is your bus current? Bus voltage?

S/C — I read you very weak but I'll give you bus voltages for the stacks. 1A, 27.8; 1B, 27.8; 1C, 27.8; 2A, 27.8; 2B, 27.8; 2C, 27.8.

Cap Com — Roger. Gemini 7, Gemini 7, this is Houston.

S/C — Gemini 7 here. You are very very weak. Say again.

Cap Com — Do not turn off section, repeat, do not turn off section 2.

S/C — Roger, we will not.

Canton — Canton has LOS at 16 02 34.

END OF TAPE

Gemini Control Houston here, 164 hours 42 minutes into this flight. In the last 10 minutes we have started a meeting by telephone with the officials at the Cape, including the Gemini 6 crew who are gathered in the crew quarters in the Manned Spaceflight Operations Building on the Merritt Island NASA area. They are discussing the ground rules, the last minute considerations and the like for our planned 6 launch tomorrow morning. During this period, Chris Kraft, the Red Team Flight Director has turned over control of this mission to the Assistant Flight Director, Charles Harmon. The Guaymas station is presently reading out the systems on the 7 spacecraft right now. He has been looking at them for about the last minute. Also we have got several onlookers in the viewing area with us right now. We can see Mrs. Lovell and her 3 children and we understand Mrs. Borman is on her way over with her children and not yet reached the Control Center. They will be listening in on this State side pass as will you. The flight plan calls for no experimental activity during the pass, again Apollo landmark photography is to be taken in the area of the Canary Islands, that will be followed by an exercise period and they will have lunch starting at -- over Tananarive at an elapsed time of 165 hours and 40 minutes, about an hour from now. The eating period will consume about 1 hour, we show another fuel cell purge in the Hawaii are on this rev, also some D-4/D-7 radiometric measurements in the Carnarvon area. Guaymas has gotten summaries to us on their systems readings. Elliot See momentarily will put in a call to the 7 spacecraft. The Guidance Navigation Control Engineer, Arnie Aldrich, advises we are showing about 30 percent fuel remaining, 30 percent out of a load that started off at roughly 350 pounds. Elliot has put in a call, let's cut in there and see what is going on.

Cap Com .... this morning, observing this pass. We would like to tell you Congratulations on your half-way mark. You are now heading downhill.

S/C Elliot, would you say Hello to them for me, please. Also, thank you very much.

Cap Com You just did it yourself. Also I see the Borman boys are here.

S/C Hi boys.

Cap Com I have a flight plan update for you.

S/C Stand by just a minute, Elliot. Go ahead, Elliot.

Cap Com D-4/D-7, 165 43 35, sequence 415 and 416, mode 02, rescheduled from previous pass. MSC-4, 166 20 41, sequence 01, mode 01, pitch 30 degrees down, yaw 25 degrees left. Do you copy?

S/C We copy.

Cap Com Roger. Do you have the humidity reading that we ask for in the cockpit?

S/C Roger, stand by. The average temperature dew point reads in our survey this morning have been dew point around 58, temperature around 82.

Cap Com Roger, copy. 58 and 82.

S/C That is 16 degrees higher than they were this morning when we got up, Elliot.

Cap Com 16 degrees higher, roger. On the fuel cell, we looked at your amp readings and decided we would hold off a little bit on this open circuit technique and just observe it a little longer.

S/C Roger, understand that.

Cap Com — Those are the only items we have on this pass and we will be standing by for the rest of your pass.

S/C — Houston, we were trying out some of this high contrast film over the States pass, but I see you are quite cloudy today.

Cap Com — That is affirmative. We are hoping for a break in this weather so we can try an MSC-4 at Hawaii, but it looks pretty bad for today. For your information the Ascension MSC-4 equipment is still down.

S/C — That is just what I was going to ask you.

Cap Com — We had a simulation with the GT-6 crew last night, final run through on the rendezvous sim and everything went real well.

S/C — Good. Looks like the East Coast is pretty clear up toward the North.

Cap Com — Roger.

S/C — Anyways it looks that way.

Cap Com — Gemini 7. Are you still having any of the water boiler venting?

S/C — This is 7. Not to our knowledge, Houston.

Cap Com — Roger.

Antigua — Acquisition, Antigua.

S/C — When the boiler vents, it also gives us a left roll, Elliot, which is very pronounce...you know it's there.

Cap Com — Roger.

S/C — Elliot, you can.....(Garble)....

Cap Com — I didn't copy that 7. Say again

S/C — Would tell the Lovell family that it looks like our grass needs mowing.

Cap Com — I'll tell her. Gemini 7, Houston.

S/C — This is 7. Go ahead.

Cap Com Could you give us another read out on those stack currents?

S/C Roger. Stand by. 1A is 3.5 amps, 1B is 4 amps, 1C is just slightly under 4 amps, 2A is 3 amps, 2B is about 2.5 amps, and 2C is slightly under 3 amps.

Cap Com Roger.

Grand Turk LOS Grand Turk.

Gemini Control here. It sounds like that wraps up the communications. When Frank Borman bid good morning to his two sons, who are here behind the glass, there were two very brilliant smiles evoked by that comment. The boys remain here in the Control Center along with Mrs. Lovell and her three children. The meeting in which Mr. Kraft was taking part has concluded. Talking with Dr. Mueller, Mr. Preston, Capt. Shirra, Maj. Stafford, and other officials associated with the launch of Gemini 6 tomorrow morning. At 165 hours even, and we have now passed the elapsed time versus the end of mission clock, it now reads 164 hours, 23 minutes versus 165 elapsed time, this is Gemini Control, Houston.

END OF TAPE

Gemini Control Houston here. Jay Lovell, Jim Lovell's son, I believe he is 11 years old, is visiting us here. He is down at Chris Kraft's console seated in a chair beside Chris looking over his console and during breaks Chris is trying to explain to him what the many colored lights mean and where they are linked to. The Borman boys have left the Control Center. They got away before we could invite them in for a little visit here. Over the Canary station we had conversation with the boys fathers and it went like this.

Canary — Gemini 7, Canary.

S/C — Go ahead Canary.

Canary — Roger. We are noticing your fuel cell hydrogen has dropped, it is almost down to minimum. You might take a look at it and boost it up a little bit.

S/C — Roger, thank you.

Canary — And it looks like your fuel cell 2 has just about leveled out and everything looks pretty good. We'll keep a close look at it on the ground, however.

S/C — Roger.

Canary — That is about all we have for today. See you tomorrow.

S/C — Righto. In regards to the Apollo landmark shot which we are coming up on right now, there are so many clouds over the areas we don't think we can get a shot.

Canary — Ah, roger. What about the Apollo, Flight?

Flight — Stand by. Not to worry about it if they can't hack it.

Canary Okay, if you can't do it, than just don't worry about it, forget it.

S/C Roger, thank you.

Canary Rog. Are you still with us?

S/C Roger, we are still with you.

Canary A further command on your rev time at Acq Aid 6.

S/C Roger.

Flight Canarys, we are going to reconfigure the Control Center here to support the mid- count test, so while you are going --- Gemini Control here again. That concludes the Canary discussion. At 10:45 central standard time this morning we reconfigured the range so that we are receiving manual summaries from the sites, the reason for this switch, and we expect that it will go on now for several hours, is to allow this Control Center here in Houston to support the mid-count on the Gemini 6 preparations for launch down at the Cape. We had more discussion via the Kano station and here it is.

Cap Com Gemini 7, Houston. How do you read?

S/C This is 7, read you loud and clear.

Cap Com Roger. We would like to ask you to keep track of this water boiler venting, keep a log on it so we can get a handle on how often it is happening.

S/C Roger, the only time we can tell it is venting is at twilight or when the sun shines at a certain way and it forms a -- when it sparkles on the ice crystals against the night sky.

Cap Com Roger, in other words, it is so minor that you can only tell it when you see it. You do not get any motions out of it

that are particularly noticeable?

S/C Roger, although right now we are in a slow left roll after we had lined up our Apollo landmark and then shut down, we did go into a slow left roll.

Cap Com Roger. 7, we would like you to just do the best you can on that as far as keeping track of it to see if we can'establish any pattern here as to how often it does vent.

S/C Roger, will do.

Kano Kano has LOS.

This is Gemini Control Houston. That concludes the Kano discussion. We may have additional conversation via Tananarive some 5 to 8 minutes from now. If we have it, we will bring it to you. This is Gemini Control Houston, 165 hours 20 minutes into the flight of 7.

END OF TAPE

Gemini Control Houston here. We are on the 104th rev around the earth. Over Carnarvon a few minutes ago, the station read out the values in the spacecraft advised 7 that they need not acknowledge, they would stand by on the ground. Jim Lovell acknowledged anyway with a mere Roger and that was that. Hawaii probably will be equally quiet on this rev. They are due to acquire at Hawaii at 35 minutes after the hour, some 6 minutes from now. We have an MSC-12 experiment planned for the West Coast of California, that is an Apollo landmark contrast photographic experiment planned on the California coast during this rev, also a cabin temperature survey to be done between Bermuda and Ascension Island. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 166 hours, 16 minutes into the mission. Elliot See has contacted 7 which is still off the coast of California. The cloud coverage has lifted out at White Sands and we are going to try a Laser experiment on this pass. We've also added two features, two smoke pods to the west to help the pilots sight that beam of light. The procedure is that Jim Lovell will get out a box which is roughly the size of a shoe box, about three by five by eight and if they acquire the light beam from the ground he locks on to it and then we'll modulate certain signal pulses that will be sent back and forth. And perhaps talk. We're going to monitor this experiment live. We don't know how much conversation will go on, but let's cut in now and see what's going on.

HOU CAP COM Gemini 7, Houston, let me know when you're complete with your Laser tracking so we can work on the tape dump.

S/C Roger

HOU Guaymas AFD, give us reading on 2C please

GYM We're trying to lock up long enough to get it.
It still reads 1.62.

HAW Houston Flight, Hawaii Cap Com.

HOU Go ahead

HAW Still reads 1.62.

HOU 1.62?

GYM AFD, Guaymas

Hou Go ahead

GYM We're reading 1.68

HOU Gemini 7, Houston, when you get a break will you give us the amp reading on the fuel cells.

S/C Rog.

S/C Roger, I understand.

Cap Com Gemini 7, we want to do a manual tape dump. Place your standby TM switch to delayed time.

S/C Standby TM on delayed time.

Cap Com Roger 7. Jim, we would like you to press on your top sternal lead again, just the top one and hold it until I tell you.

S/C Rog.

Cap Com Gemini 7, place your tape playback switch to continuous.

S/C Roger, tape playback to continuous.

Cap Com Okay Jim. You can release the top sternal lead and press on the bottom one until I tell you.

S/C Roger, will do.

Cap Com Sounds like you got about 3 hands going there.

S/C Roger. Elliot, we had a beautiful view of White Sands and I don't think we were that far away, we could have picked that beam up if it was boresighted correctly.

Cap Com Roger. Jim, I would like you to release that bottom sternal lead and then press on it again, just alternately, just on and off for a few times here.

S/C Roger.

Cap Com Okay, that's fine Jim. You can release the sternal lead. Captain Brentnall is here telling me again what a good job you guys are doing on the D-4/D-7's. You did real well and you got the Polaris very well.

S/C Very good. Elliot, we just did a cabin temperature survey a short time ago. Do you mind if we scrub this one coming

up on 166?

Cap Com — Roger, that will be okay. Could you tell me what the open circuit 2C is looking like now on the amperage, on the voltage.

S/C — Roger, it is 31.2.

Cap Com — 31.2, roger.

Antigua — Acquisition, Antigua.

Cap Com — Gemini 7, place your tape playback switch to command.

S/C — In command.

Cap Com — And standby TM switch to off.

S/C — Standby TM is off.

Cap Com — Gemini 7, we will take a look at the fuel cell open circuit voltage and the time and so forth again at Ascension and we will probably put it back on at that point.

S/C — Roger, understand. We will probably put it back on at Ascension.

S/C — Elliot, if we lose communications with you, we shouldn't leave it off for much more than 13 or 14 minutes, should we.

Flight — That's right, Frank. I think maybe we ought to turn it off here before we have LOS at Antigua, so stand by a minute.

S/C — Roger.

Cap Com — 7, standby for a minute. Surgeon has a brief note and I have a -- we'll get back with you on the fuel cell.

Surgeon — Gemini 7, this is Surgeon. Jim, in checking that lead, it is very definitely the lower sensor, the sensor on the bottom

of the sternal there, so we obviously can't do anything about that as long as you are in the suited condition and we will have to await some further developments in that area before we are able to have you do anything further with that sensor. We are going along with the single lead.

S/C Roger, understand.

Cap Com Gemini 7, Houston. Do you still have the delta P light on.

S/C Affirmative. Delta P light has been on.

Cap Com Roger and has the stack 2C voltage gone up to the top of the scale, 32 volts.

S/C It has risen a little bit, but not much. I would say about a tenth to two tenths.

Cap Com Roger.

Grand Turk LOS at Turk.

Flight Gemini 7, this is Houston. We would like to have you put stack 2C back on the line at this time and then give us a complete stack amperage readout.

S/C Roger, 2C back on the line. 1A, 4 amps; 1B, $4\frac{1}{2}$; 1C is 4; 2A, 3; 2B about $2\frac{1}{2}$; and that 2C is still around 2 amps.

Cap Com Roger 7. We will be contacting you further on it at Ascension.

S/C Roger.

Cap Com Sure you will be keeping track of it between here and Ascension. We will be interesting in whether it increases or what it does.

S/C Roger, I'll watch it.

Cap Com See any difference in 2C yet, the last reading was 2.0.

S/C No, actually Elliot, it looks like it is down now to almost $1\frac{1}{2}$ amps now.

Cap Com Roger.

Antigua LOS Antigua.

This is Gemini Control here. You heard the conversation first about that Laser experiment, didn't work out, out at White Sands. Jim Lovell said it way unusually clear out there, they could see the smoke but they did not acquire the light beam. The chances for acquisition are unlikely in a case like that because they were a little more than 250 miles from the source. They will be in a much better position over Ascension and Hawaii later today. That stack 2C amperage is still the biggest puzzler this morning. Since Carnarvon our readings show on stack 2C for amperage 2.4 and at Hawaii it read 1.9, Guaymas 1.6, Texas 1.5. It was approximately over the Texas station that we switched to the open position on the stack and we heard Lovell report a rise. It got up to about 2 and then out over the Island Chain as they started the swing down over the Atlantic, it started declining again. The last reading he gave us was 1.5. The voltage on that particular stack is well up to an acceptable value, over 30, up in the area of $31\frac{1}{2}$. We will be taking a close look at that at Ascension, Tananarive, and on around the range. We have ready for you now some Hawaii conversation before we started this long State side pass. We will play that for you now.

Hawaii Gemini 7, Hawaii Cap Com.

S/C Roger, 7 here.

Hawaii Roger Gemini 7. Will you place you DCS circuit breaker to open.

S/C Open.

Hawaii Your TM control switch to real time and Acq aid.

S/C .....

Hawaii Say again.

S/C Roger.

Hawaii Adapter C-band to continuous.

S/C Adapter C-band to continuous, roger.

Hawaii Roger, standing by. Hawaii has TM solid.

Flight Roger.

Hawaii Gemini, Hawaii has C-band track. Gemini 7, Hawaii Cap Com.

S/C Go ahead, please.

Hawaii Roger, we are going to let you in this configuration until Flight advises us to change. The reason for this is we are supporting the pad test on 6, so we will just let you in this configuration.

S/C Fine. Thank you.

Hawaii We show you go on the ground and I have some information for you to copy when you are free.

S/C Standby a minute.

Flight You can start reading him that Hawaii, it is correct.

Hawaii Roger.

S/C Go ahead, Hawaii.

Hawaii Roger, they will be having a manual tape dump over the States and I have a flight plan update when you are ready to copy.

S/C We are ready.

Hawaii Title, node at 166 00 12, rev 104, 173.3 degrees east, right Ascension 10 hours 24 minutes 18 seconds.

S/C Roger, we have it.

Hawaii Transponder test at 167 35 00, sequence 01 at Hawaii. Off at 167 59 00. Apollo at 168 08 29, sequence 58, pitch 30 degrees down, yaw 13 degrees right. MSC-2 and 3, at 168 15 00, sequence 02, same time replace tracer storage accumulator if not previously done. At 168 52 00 crew status

report, Command Pilot Carnarvon. At 169 00 00 bio-med recorder number 1 continuous. Are you with me.

S/C Yes sir.

Hawaii At 169 17 00 crew status report, Pilot, Hawaii. S-5, 169 34 00, pitch 90 degrees down, yaw 0 degrees single. Photograph of the Southern Mexican Yucatan area. MSC-2 and 3, 169 49 00, sequence 03, stop at 170 04 00. At 171 00 00, bio-med recorder number 1 off. Still with me Gemini 7.

S/C Roger.

Hawaii At 171 26 00 PLA update, fuel cell purge over RKV. At 171 35 00 exercise. At 171 45 00 housekeeping period, At 172 10 00 flight plan report, CSQ, at 172 15 00 eat period, At 173 15 00 bio-med recorder to continuous and start sleep period. At 184 15 00 end of sleep period. MSC-2 and 3, 184 15 00 off. At 184 15 00 bio-med recorder number 2 off. At 184 23 00 purge fuel cells, PLA update over Canaries. Copy Gemini 7.

S/C Everything except the last time.

Hawaii The last time was 184 23 00.

S/C I got it now.

Hawaii Roger. He just powered up his platform -- DISREGARD Flight, he powered up his ACME system.

Flight Okay, that's what we thought.

Haw Hawaii had TM and C-band LOS.

Flight Roger Hawaii.

END OF TAPE

This is Gemini Control, Houston at 167 hours, 52 minutes into the flight. A very few minutes ago, exactly 8 minutes ago, we were successful with a Laser experiment over Hawaii. The ground...The spacecraft transmitted successfully a beam...Let me reverse that. The spacecraft saw the ground beacon locked onto the light and did transmit. We are checking...still checking... at Hawaii to see what the effect read out in the ground was. The time of acquisition was 1:15 Central Standard Time. They remained locked on the light beam for approximately 2 minutes. We have the tape of that pass for you, and we'll play it for you now.

HAW C-Band track at Hawaii. They're back to continuance, Flight.

HOUSTON Roger.

HAW Put your Delta C-Band back into continuance position.

S/C In the continuance position.

HAW Roger.

HOUSTON Prepare to receive the automatic summaries now.

HAW Are you reading it?

S/C We're seeing your beacon intermittently. It should.....shortly.

HAW Air track at Hawaii.

HOUSTON Roge.

HAW Gemini 7, look to 080.

S/C Read 080.

HAW If you look at an..at the islands at 020, look generally to the east, and you may be able to pick out the island.

S/C That's the planning commands we got.

HAW Okay. I'm just giving you a general look as you come up over, from what my radar's looking at you. I'm turning you around, so maybe you'll have the general look towardw the island. Okay. Stay

with your mode. Pitch 30 down and yaw 20 right. Then try and look in that general vicinity from the window.

S/C I've got it now, thank's.

HAW Roger.

HOUSTON Our commands are based....

S/C You... yaw 2 right; it's yaw 20 right. Is that correct?

HAW Is that yaw 20 right, Flight?

HOUSTON That's correct.

HAW Roger. Yaw 20 right. 2 zero.

S/C Okay. I thought it was two, but we've got the island.

HAW Okay. Could you give ma a read out of 2 Alpha, 2 Bravo, and 2 Charlie?

HOUSTON You needn't....

S/C I'll get right on it. We already see the beacon.

HAW Roger. Is that good, Flight?

HOUSTON Let him track for a while.

HAW Okay.

HOUSTON Read out here of 2 Charlie is 1.8.

HAW 1.8, Flight, right. Are you picking up the beacon at all?

S/C Nothing at all, but we see the island loud and clear.

HAW Okay. Your transmitting down?

S/C Roger.

HAW Okay. Flight.

HOUSTON Go ahead.

HAW You want an A and a B to update your computers?

HOUSTON Affirmative.

HAW Okay.

S/C Are you that group of buildings on top of the hill?

HAW That's affirmative. Right up on top of the mountain on the northwest portion of the mountains on the island.

S/C And, I got you loud and clear.

HAW Okay. You don't see the beacon at all?

S/C Not a thing.

HAW Can you pick out any of the antennas to the north of the buildings.

S/C There's clouds over the ...to the east of you now.

HAW Okay.

S/C I see a lot of buildings and what looks like antennas scattered around them. I've....the northwest side of the mountain.

HAW Okay.

S/C There's also some smoke, it looks like over the south side of the hill.

HAW That could be true. They're probably burning sugar cane.

S/C That's what it looks like. We're transmitting.

HAW Roger.

S/C .....I got it.

HAW You got the beacon in sight?

S/C The beacon, I think.

HAW Roger.

S/C Is it pretty close to the .....out by the ridge there?

HAW That's affirmative.

S/C Okay, I saw it. I can see it again. I see it again.

HAW Very good.

S/C You're hitting us. You're ..... There it is again.

AW	Very good. Try aiming at it.
S/C	Okay. Now I got the Laser.
HAW	Okay.
S/C	It's still with us.
HAW	Okay.
S/C	Should have got you on that one.
HAW	Very good. Stand by. Seven, Hawaii.
S/C	Go ahead, Hawaii.
HAW	Okay. Have you seen anymore of it?
S/C	I don't believe so.
HAW	Okay. You're getting pretty far down in the pass; I'd knock it off at this time. Can you give me a read out of section 2?
S/C	Roger. Stand by. 2A, 3 amps; 2B, 2.5 amps; and 2C, 2 amps.
AW	Okay. Thanks very much.
HOUSTON	What's 2A?
HAW	3; 2B, 2.5; 2C, 2.
HOUSTON	Roger.
HAW	Hawaii Cap Com. If there's nothing further, we'll be standing by.
S/C	Thank you.
HAW	Seven, Hawaii.
S/C	Go ahead.
HAW	You can put your adapter back to command.
S/C	Roge. How about asking MCC if they picked us up.
HAW	Okay. They're copying all that. You in "Command"?
S/C	Roger.
HAW	Flight, Hawaii. Hawaii Cap Com.
HOUSTON	Go ahead.

HAW We're having a little trouble with that C-Band beacon when we go to "Command". It drops in and out. It's back on now; I've got them back in the original configuration circuit breaker, as far as the DCS, that is. TM control switch is in command. The adapter C-Band is in command. And, we do have solid lock at this time.

HOUSTON Roge. Do you see the beacon?

HAW I'm unable to raise the Laser people. I'll get a hold of them. As soon as we get them back in the Band, I'll try and give you some more info.

HOUSTON Roge.

HAW Hawaii Cap Com.

HOUSTON Go ahead.

HAW They think they might have gotten something.

HOUSTON An LOS main?

HAW Roger. LOS at Hawaii.

HOUSTON Roge.

Gemini Control, Houston back here. I think it's fair to say that's as excited as we've heard Frank Borman sound on the last 168 hours. No additional information from the ground station in Hawaii as to how things worked out in the Laser Van. That van is manned by communicators from the Ames Research Center, a NASA Center near San Francisco. The third voice you heard in the conversation was that of Ed Findell, a Manned Spacecraft Center Capsule Communicator working at Hawaii. This is Gemini Control, Houston.

END OF TAPE

Houston, here, 168 hours and 11 minutes into the flight. The word from Hawaii is it looks tentatively like they did get a few hits with that Laser transmission of Jim Lovell's. They're busy working on their data reduction right now. We'll probably hear more from them in the next half hour or so. Meanwhile, on the pass across the states there was much additional discussion on the Laser attempt. Jim Lovell suggested that we look seriously into a night pass on one of the stations. Here on the ground the experts concur with that. We have no tentative time for a reschedule of the experiment. Unfortunately, equipment problems have knocked us out from any attempts today with the Ascension Station. Ascension, we hope each day, will be up. Now, it looks like at least morrow before it will be ready to support any experiments. Borman confirmed again that he saw it loud and clear. It must have remarkably clear. He could pick out the buildings and even some antenna set ups on top of the mountain in Hawaii. The pattern for the experiment was the pilots were to acquire first, a flashing light and when they locked on that flash would become a steady light. Then, Lovell over that steady light wave was to transmit a 100 pulse per second beam of light from his little shoe box transmitter in the window. There was no conversational attempt in this first series of experiments. When and if that is done with complete success, we'll then go to an eight kilocycle pulse from the spacecraft and finally attempt some voice communication over the light beam. Here now is a rather lengthy pass across the southern United States.

HOU Cap COM Gemini 7, Gemini 7, Houston, do you read?

S/C Roger, Houston.

HOU CAP COM Will you give me a read out on your stack two, section two stacks.

S/C Roger, 2A is reading 3 amps, 2B - 2 ½, 2C - 2.

HOU CAP COM Roger. We're planning to do this single stack purge. In preparation for that, we'd like you to put 2C on open circuit and we'll check the voltage at that point.

S/C 2C on open circuit at this time.

HOU Solid TM and all systems look good, we're getting some read out on those stacks.

HOU CAP COM Roger.

GUAYMAS Flight, Guaymas.

HOU FLIGHT Go ahead.

GYM We calculate 1.09.

HOU FLIGHT Your data shows 1.6.

GYM I hope the data is right. We may have got a bad PCM drop out about that time.

HOU FLIGHT You should see it down to.....

S/C Houston this is 7, reading 30.8 on the open circuit voltage D. C.

HOU CAP COM Roger, Gemini 7, let's watch it for a minute and see if it goes up a little bit.

HOU FLIGHT You should be reading zero now he's got an open circuit Guaymas.

GYM We got it before he opened it.

HOU FLIGHT Your summary shows 1.6.

GYM Roger, it's probably dropping down when we punched it up.

HOU CAP COM Gemini 7, did you acquire the Hawaii beacon, Jim?

S/C Roger, Frank got it while I was looking through the Laser. Frank got the beacon. We did have it for some time but Frank had the beacon for some time.

U CAP COM Did you actually have the beacon also?

S/C .....garbled...

HOU CAP COM I say, did you actually have the beacon also?

S/C Rog, Frank saw the beacon.

HOU CAP COM I say did you see it also?

S/C I saw it for a moment, but then I went from visual into the telescope and began to loose it, green telescope shades everything out.

HOU CAP COM Roger, so you feel your pointing was very good though?

S/C Pretty even, yeah, for the spacecraft it's great.

HOU CAP COM Roger

GYM We show practically zero difference now on the thing.

HOU FLIGHT Rog.

HOU CAP COM What does your voltage look like now, Jim?

S/C About 31 volts Elliot.

HOU CAP COM Roger, we'd like to have you put it back on the line now and after it's stabilized for a few seconds, 30 seconds or so give us a section 2 stack read outs.

HOU Texas remote, California local.

S/C Roger stack read outs coming up. 2A - 3 amps, 2B - 2½, and 2C about 2.

TEX Texas remote.

HOU CAP COM Roger, you want me to read out the procedure for this purge, or do you just want to do it step by step?

S/C Would you do it step by step to make sure we've got the correct procedure?

HOU CAP COM Roger

HOU Go ahead Guaymas. Do you see any difference in the 2C at this point.

GYM We're showing 1.41 at this time.

S/C Negative 1.5. It's still pretty low. .....2 volts or 2 amps

HOU CAP COM Okay, the procedure is as follows. Cross over open

S/C Cross over is open at this time, it's open.

HOUSTON CAP COM And stack 2A and 2B off.

S/C 2A and 2B going off.

HOU CAP COM Roger. Would you give us a reading on stack 2C average?

S/C Stack 2C now reads 3 amps.

HOU CAP COM Roger. Now, we want a normal hydrogen purge on the section 2.

S/C That's roger. Read flight?

HOU CAP COM Roger, Gemini 7. Let's pause a minute and then we'll be putting 2Aand 2B back on. And you can close the cross over any time you want.

S/C Cross over is off.

HOU CAP COM Roger. Do you see any difference in the current yet? Is it still about 3?

S/C Roger, it's 3 amps.

HOU CAP COM Okay, you can put 2A and 2B back on at this time.

S/C Right, 2B is back in a line.

HOU CAP COM And when they settle down a little bit, you can give us stack readouts again.

S/C 2A is 3 amps, 2B - 2½ amps and 2C - 2 amps.

HOU CAP COM Roger, 7, we'll watch it for a while now.

S/C Roger, there's one question that still is my mind, the cross over valve for that purge is in the "off" position. Is that the way you want it?

HOU CAP COM Negative, it should have been in the open position.

S/C You mean "on" position.

HOU CAP COM Roger.

S/C It wasn't that way. .....garbled....off position.

HOU CAP COM Roger. Gemini 7, we'd like to repeat it and do at this time with the cross over valve in the "on" position that is open.

S/C Roger towards the on position.

HOU CAP COM And then 2A and 2B off in the normal purge.

S/C 2A and 2B are off and we go on with the normal purge. Cross over going off.

HOU CAP COM Roger.

S/C 2A and 2B back on the line.

HOU CAP COM Okay. Roger, 2A and 2B back on.

S/C Okay Elliot, let's see, 2A is reading 3, 2B is reading 2½ and 2C is still out there at 2.

HOU CAP COM Okay, we'll watch it for a while here, now. Gemini 7 are you ready for the day's news?

S/C Roger standing by.

HOU CAP COM Defense Secretary McNamara announced plans for a new bomber development yesterday to be a mock II type airplane based on the variable sweep wing concept. It's to go into operation in 1968 and is to replace the B-52's. Everything is "go" for GT-6 tomorrow and we've been in touch with them several times today. And things are going along real fine. Congressman

HOU CAP COM "Tiger" Teague says he plans to introduce a bill making anti-Viet Nam war demonstrations an act of treason. The Pirates' pitcher Bob Friend has been traded to the Yankees and the Chargers play the Oilers here tomorrow.

S/C Thank you.

HOU CAP COM Gemini 7, did you have the transponder switch on over Hawaii for that temperature survey?

S/C No, I goofed on it Elliot, I have to turn -- I was going to ask you when should I turn it on now?

HOU CAP COM Okay, we'll reschedule that for you.

S/C We were so busy with the Laser that we forgot about it completely.

HOU CAP COM Roger, I thought that happened.

S/C The Laser is no great big bathtub of light, it looks more like a speck in a big vast island.

HOU CAP COM Rog. We'll make it work yet.

S/C I saw it loud and clear but it just wasn't what I expected.

HOU CAP COM Do I understand that Jim is unable to keep it acquired real well while he's looking through his sighting device? That the color of the filter there tends to blank it out so that he can't keep in contact with it?

C/C Well, I don't think he really had it long enough to try it, did you Jim?

LOVELL The best idea I think is to pick it up with your eye ball and then go to the digiting on the telescope but what I was trying to do was to eye ball it with the telescope first and I had the..(garbled) on the ...(garbled) scope turned up on the light and the green filter makes it impossible to spot.

HOU CAP COM Roger Jim. To try and do that at night is going to be the only way to really be sure of it.

S/C Roger, I think you ought to look seriously into a night pass some place and make that a high priority.

HOU CAP COM Roger, right now, we're trying to get any kind of pass as you know, we've had the weather problem so much and equipment problems.

S/C Roger. Elliot?

HOU CAP COM Go ahead.

S/C If you get a chance, how about checking with Susan and see how everything is on the home front will ya? I'll talk to you on the next time around, if we get time.

HOU CAP COM Everything is real fine. The boys are doing particularly good in school Frank.

S/C How good?

HOU CAP COM We'll call anyway and try to get some more specific word, but I did get that word definitely today.

S/C Thank you. We're looking for Trinidad now but it's very cloudy down here.

HOU CAP COM Roger. How would you like a weather forecast for the Cape tomorrow morning.

S/C I'll give you one tomorrow. I tell you I think it'll be cloudy unless the sun is shining.

U CAP COM Roger, we copied that. You probably noticed from that big long flight update we gave you that we're juggling your time somewhat to plan farther on the launch for tomorrow, the GT-6 launch. That's why we changed all your times there. What we're planning in regard to your suit -- or getting you suited is to wait until after the launch because only then will we know for certain just how long the rendezvous is going to take. We'll have plenty of time after that.

S/C Roger.

HOU CAP COM As you know, it might even be as much as a day to complete the rendezvous so we didn't want to get you back in the suit early if it were not necessary.

S/C I realize that. Jim's volunteered to spend the next week in the suit.

HOU CAP COM You hear Jim's comment on that.

S/C I might also comment that whoever is computing these pointing commands is doing you a fantastic job, they're right on the money every time.

HOU CAP COM Unfortunately, he heard that. It will give him the big head.

S/C They are really good, we just saw Trinidad, took a picture but through some clouds.

HOU CAP COM Roger. How about giving me one more read out on your stack before we loose you, Jim?

S/C Roger, Elliot, 2A is reading 3, 2B - 2½ and 2C is still barely hanging on to 2, slightly below.

HOU CAP COM Roger.

S/C Elliot, I'd like to reiterate the flight plan 'cause this next week it's going to take a lot more fuel just to maintain attitude, the vents or the water boiling will build up the rates pretty swiftly.

HOU CAP COM Roger, 7, we're going to work on that.

S/C Thank you

Gemini Control here, Elliot See took Frank Borman's suggestion and checked in at the Borman household and got an "all's well" report there. Here is what he had to say to him going over Ascension Island just a few minutes ago.

HOU CAP COM Gemini 7, Houston, how do you read?

S/C Go ahead, Houston.

HOU CAP COM I just talked to Sue, Frank and she said everything is fine on the home front and she's glad to see you on the downhill side.

S/C Thank you, Elliot.

HOU CAP COM She reiterated that the boys are doing well in school and also she said they thoroughly enjoyed their visit to the Center here on your last pass and your message to them.

S/C Thank you.

HOU CAP COM I have a flight plan update for you on this transponder test, we've rescheduled it when you're ready to copy.

S/C Ready.

HOU CAP COM Okay, time 169 20 00, transponder on, off at 169 35 00. Do you copy?

S/C .....(garbled)

HOU CAP COM Gemini 7, did you copy?

S/C ..... (garbled)

HOU CAP COM Gemini 7, did you copy? We have some interference here.

S/C Say again, please.

HOU CAP COM Did you copy the flight plan update?

S/C Negative say again please.

HOU CAP COM Roger, 169 20 00, transponder on, off at 169 35 00. Do you copy?

S/C Roger, we copy.

HOU CAP COM And how does stack 2C look?

S/C C is 1½ amps.

HOU CAP COM Roger copy, 1.5.

S/C Roger.....(garble).

HOU CAP COM Say again, 7, did not copy.

S/C Carnarvon will probably fix it for us.

HOU CAP COM Still didn't understand you. Gemini 7, we'll contact you again at Tananarive..

S/C ...(garble)

END OF TAPE

Gemini Control Houston here at 168 hours 51 minutes into the flight. We had conversation at Tananarive about 10 or 15 minutes ago and again it was regarding that balky stack 2C. They have elected to turn that switch to the on position again and leave it on there for a specified length of time, 20 minutes, I believe to see what the reaction is. Earlier during our prelaunch press briefing down at the Cape we had some 13 minutes of accumulated tape over various stations. The spacecraft during that period was on a swing between Africa and Hawaii. We have elected to turn those tapes over to the Audio pool and they will appear in your transcriptions that is just for the press benefit. Our Gemini 6 spacecraft clock up on our big board here is presently showing -360 minutes and it will remain at that point till about 1:30 tomorrow morning our time when it will start moving again and then it will meet the launch vehicle at -240 minutes. As I said we have the Tananarive tape, we will play it for you now.

Cap Com — Gemini 7, Gemini 7. Houston. How do you read?

S/C — Gemini 7, go ahead.

Cap Com — Roger, would you give us a stack 2C reading.

S/C — $2\frac{1}{2}$ amps Elliot.

Cap Com — We would like to place stack 2C off and we will leave it off through Carnarvon. That will be 20 minutes. We have confirmed this with a test at McDonnell St. Louis for 30 minutes. Do you copy.

S/C — Roger, stack 2C (cut-out)

Cap Com — You cut out on that transmission Jim, say again.

S/C — Roger, it is open circuited now and we will clock it for 20 minutes and we will talk to you at Carnarvon.

Cap Com — Roger Gemini 7. This is to inform you that the GT-6 midcount is completed with no problems.

S/C — Roger, tell Wally and Tom we will be looking for them and

we will have tea for them.

Cap Com Roger.

END OF TAPE

Gemini Control here. The spacecraft whipping up across an area we are hopeful a rendezvous will take place tomorrow afternoon, oh, an hour or two later than we have right now. Carnarvon acquired and held a very good voice signal, much higher than normal passes, here's that conversation!

CRO Gemini 7, we have a valid blood pressure, give us a mark before you start exercising.

S/C Mark. Pressure coming down. Pressure full scale

CRD TM's a little noisy this pass.

CAP COM That's Carnarvon

CRO Gemini 7, we have a valid blood pressure. We are standing by for your food, water and sleep report.

S/C Roger. Coming up. The Command Pilot has 563 ounces today and for noon meal we had Day 6 Meal B.

CRO I understand both Pilot, Command Pilot had Day 6 Meal B and Command Pilot had 663 ounces today, I do have have any data on the pilot.

S/C Roger, the pilot had 434 ounce

CRO Understand 434

S/C And that was 563, not 663

CRO Ah copy, Command Pilot 563 and pilot 434

S/C Ah 474 for pilot

CRO 474, thank you.

HOU FLT Tell him to open circuit voltage on 2C

S/C Garbled ...any sleep report on that?

CRO Let's break on that - can you a reading on the open circuit voltage on 2C?

S/C	The circuit voltage on 2C is all scale live.
CRO	Roger
HOU FLT	Sounds good, to quote ECCON
CRO	Sounds good
S/C	Roger, looks like it takes a little longer
CRO	Cape Flight, we are showing bus voltage as being way down
HOU FLIGHT	Bus voltage is way down?
CRO	That affirm, or he's talking to us..I don't know if we've got a problem or what, we've had LOS
HOU FLT	We show 25.3 on your summary
CRO	On our summary message, uh?
HOU FLT	That's affirmative
CRO	Okay, we'll get some more check here. It was up at the start of the pass.
HOU FLT	ROG
CRO	Carnarvon Cap Com, would you turn your TM to command position
S/C	The TM is on the command position, Carnarvon
CRO	Would you push your tape playback switch to the reset position
HOU FLIGHT	Why?
CRO	I didn't get a TX here
S/C	Carnarvon, this is 7 requesting to put 2C back on the line.
HOU FLT	Go ahead. Go ahead.
CRO	7?

S/C 7.

CRO Roger, Gemini 7,place 2C back on the line at this time. Okay, we did not get a TX command in and he went over the hill with real time TM off.

CAP COM That's okay. We wanted to keep that beacon up for the RTK.

CRO Oh, okay.

CAP COM Did you get our 2011 Zulu

S/C Well, he's got the thing in the continuous position.

CAP COM It says on there its on the command position, that's what we said on our mission instructions

S/C That's affirmative. My mistake. A total of 7 minutes and 15 seconds worth of TM on that pass, instead of the expected four minutes

HOU FLT Rog. Kauai, Houston Flight.

KAUAI Houston Flight, Kauai Cap Com

HOU FLT If this BG04, that is the control busses low off scale there we ought to have him check the sequence lights control circuit breaker..

Gemini Control here. That was a crew status report on Frank Borman, of course, over Carnarvon. Over Hawaii they are to turn their transponder on - their L-band transponder. They are also to have a crew status report on Jim Lovell on Hawaii. We will do a transponder test in that area. In the area around California and Guaymas off the southwest coast of the United States we'll do an S5 which is the synoptic terrain weather photography, and over the Cape during this stateside pass we'll turn the L-band transponder off. We have tentatively rescheduled another Laser test for the 108th revolution around the earth over Hawaii. That's a pass that will take the spacecraft directly over the island chain, and they should have an excellent opportunity, just as they did, on the rev earlier to see that beam of light

coming up from the ground. This is Gemini Control, Houston.

END OF TAPE

Houston here. When 7 went over Hawaii a few minutes ago it sounded like this.

Hawaii — Gemini 7, this is Hawaii Cap Com.

S/C — Go ahead Hawaii, Gemini 7.

Hawaii — We have a valid temperature. Standing by for your blood pressure.

S/C — Roger, we are turning on the radar transponder now.

Hawaii — Roger, understand.

Flight — That was already on.

Hawaii — Negative Flight, that was the C-band.

Flight — Rog, turn it on the L-Band.

Hawaii — Cuff is full scale.

S/C — This is Gemini 7. Will you inform MCC that our water boiler is venting.

Hawaii — Roger, understand. Water boiler venting. Flight, did you copy.

Flight — Affirmative.

Hawaii — We have a good blood pressure, standing by for your exercise. On your mark.

Flight — We would like an A summary after your transponder is on there.

Hawaii — Roger.

Hawaii — Cuff is full scale.

Hawaii — Houston Flight, Hawaii Cap Com.

Flight — Go ahead.

Hawaii — That B (bravo) chart 04 was reading 25.3 volts. That's bus voltage.

Flight — Rog, we see your summary, read on 2 Charlie. We read 1.7 off your summary.

Hawaii — Stand by one.